

A R I S T O T L E's

New B O O K of 1506/711 (1)

PROBLEMS,

Set forth by Way of

Question *and* Answer.

To which are added,

A great Number from other Famous

Philosophers, } } Astronomers,

Astrologers, } } AND
Physicians.

Shewing the

Secrets of NATURE and ART:

Together with

The Interpretation of *Dreams*, Signification of *Moles* in any Part, the Nature of *Ghosts*, the Reason of Eclipses of the *Sun* and *Moon*; also, *Wonders* in the *Creation*, as Earth-quakes, Ebbing and Flowing of the Sea, &c.

The Sixth Edition.

L O N D O N,

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To the READER.

Reader,

IN this elaborate Work you will find such a vast Treasure of Knowledge, to inform and cultivate your Understanding in the *profound Mysteries of Nature and Art*, that no Age hath ever produc'd the like, tho' compil'd even in the largest Volume. It is partly gather'd from the most Learned of the Ancients, and justly celebrated Writers of later Times, as it lay scatter'd (or rather bury'd) among vast heaps of tedious Matter; being form'd, as it were, out of a *Chaos of Confusion*, and digested into a Method so plain and easy, that all *Rational Capacities* may understand, and greatly improve by it.

'Tis recommended to all Lovers and Searchers after Knowledge, that they may not only reap Profit and Pleasure by it, but also Magnify and Adore the Almighty Creator of all Things, when they behold and consider the wonderful Works of his Hands, and *what marvellous Things he hath done for the Children of Men*; how He hath fram'd us in all the Parts of our Bodies and Minds, with their several attendant Faculties and Operations; how we are generated at first, grow and preserv'd in the Womb, and then are brought forth; containing the whole Mystery of the Generation of Mankind, with all the Organs and Parts conducing to it, as well as the other Members, particularly describ'd: As also choice Observations and Directions, adapted to the Use of the Female Sex, to know whether they are with Child or not, and from thence to the time of their Delivery; also what Issue will be produc'd (whether *Male or Female*) before it comes into the World; choice Secrets to prevent Miscarriages, cause an easy, safe, and happy Delivery, with its Appendages: Likewise the Causes of false Conceptions and monstrous Births.

Here you may find the Reason why the several Senses so exactly perform their Offices; how the Elements agree with the Humours of the Body, and by what means they operate in the several Constitutions

To the R E A D E R.

a timely Regard to prevent Sickneſs and Diſorder both in things of Body and Mind; with many other wonderful Things and Matters appertaining to, and highly concerning *Mankind*.

In this Book you may find out the Nature and Interpretation of *Dreams*, as alſo the good or bad Fortune that may attend you, by certain Lines, Marks, and Characters imprinted by Nature on your Bodily Parts, and influenc'd by the *Cæleſtial Bodies*: With the Cauſes of your Inclinations, the ſeveral Paſſages of the Mind, and whatever properly relates to Human Life. Alſo the Motion and Harmony of the *Cæleſtial Bodies*, with their Order and Influence; the Eclipse of the Sun and Moon, Comets or Blazing-Stars, Meteors, and other fiery Impreſſions in the Air: And on the Earth Prodigies in Nature, and the Natural Cauſes of the Rainbow, Rains, Dews, Miſts, Froſt, Snow, Hail, Thunder, Lightning, Winds, Earthquakes, Ebbing and Flowing of the Sea, Springs hot or cold, and the like; with the Signs of all ſorts of Weather before it happens.

You have likewiſe the wonderful Vertues of Minerals, Metals, Stones, Herbs, Plants, Flowers, and other Rareties; with many Artificial Experiments, ſhewing Wonders to the Beholders when practis'd.

Alſo the Nature of Spirits, Ghoſts, and other Apparitions, and the Reason of their appearing to *Mankind* chiefly in the Night; how they aſſume Bodily Shape, frame Voices, and act by Motion.

And whereas we daily behold divers Meteors, but very few know any thing of their Cauſes, yet thoſe who don't may here be inform'd to their Satisfaction. With great Variety of other Matters highly neceſſary to be known, and for that Purpoſe brought to *Publick View*, that both Young and Old may partake of the Benefit and Advantage to be found by them, which is the Deſign of this Book, and the Deſire of

Your faithful Friend,

J. S.



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The Famous

ARISTOTLE

New Book of PROBLEMS,

Learnedly set forth by way of *Question*
and *Answer.*

Probl. I. *Of the Four Elements, and how they are
conceiv'd by Sense, and agree with the Four Hu-
mours in the Body of Man : Also what those Hu-
mours are, and how they operate, &c.*

Quest. **W**hat are the Elements that contri-
bute to Life, and by which Things
Animate and Inanimate subsist?

Ans. An Element (by the Definition common-
ly receiv'd among Philosophers and Physicians,
and most of the learned Men in the World) is the
least and most simple Portion of that very Thing
which it composeth : For the first and simple Bo-
dies are call'd Elements, *viz.* Fire, Air, Water,
and Earth, which accommodate and subject them-
selves as Matter to the promiscuous generation
of all Things below, whether we understand
Things perfectly or imperfectly mix'd. Such
Elements are only to be conceiv'd in your Mind,
seeing 'tis not granted to any External Sense to

New and useful Problems.

handle 'em in their pure and absolute Nature : Which is the Cause that neither *Aristotle* nor *Hippocrates* express 'em by the Names of Substances, but of proper Qualities, as, *hot, cold, moist, and dry*, because some one of these Qualities is inherent in every Element, as its proper essential Form, not only according to the Excess of Latitude, but also of the active Faculty, to which is join'd another simple quality, and for that reason principal, but which notwithstanding attains not to the highest degree of its kind ; as *Galen* tells us in his Book of Elements.

Q. How do you make this more plainly appear ?

A. It appears, for example, that in the Air we observe two Qualities, *viz.* Heat and Moisture, both Principal, and not remitted by the comixture of any contrary Quality, for otherwise they are not Simple ; Therefore we may say, What hinders that the principal Effects of Heat shew not themselves as well in the Air as in the Fire ? For altho' the Air has a great Heat, according to its nature, extent, and degree, as Fire, yet it is not so great in its active quality ; and the material reason is, because the heating Force in the Air is hinder'd and dull'd by the society of its Companion and adjoining quality, *viz.* Moisture, which abateth the Force of Heat, as on the contrary Dryness quickens it ; which makes us allow, that the qualities of Fire are *hot and dry* ; of Air, *moist and hot* ; of Water, *cold and moist* ; of Earth, *cold and dry*.

Q. How are the Elements understood to be mix'd in Compound Bodies ?

A. The four Elements, in the composition of Natural Bodies, retain their proper qualities, but

that by their mixture, and the meeting together of Contraries, they are temper'd and abated, and therefore not so distinctly discernable when confounded together; yet in burning a heap of green Wood, or suchlike combustible matter, it will more evidently appear, for there the Flame expresses the Fire, the Smoak the Air, the Moisture that sweats out at both ends the Water, and the Ashes the Earth: And these are compar'd to the four Humours in the Bodies of Men and Women, by which Life subsists.

Q. What are those Elementary Humours? And how are they usually defined, as to their Nature and Effects?

A. They are Blood, Phlegm, Choler, and Melancholy. Blood hath its nearest Matter from the proportion of the Chyle, or digestion of Food, and being begun to be labour'd in the Veins, at length gets Form and Perfection in the Liver; but it has its remote Matter from Meats of good Digestion and Quality, which cause Alacrity of Mind, and a lively Complexion.

Phlegm is a certain rude and imperfect Blood, raw and indigested for want of much Heat, but exceeding necessary to allay the heat of the Blood and Choler, by a due Temperament, for which cause, in a state of health, it runs friendly with the Blood in the same Passages of the Veins; and also upon any Necessity happening by Famine or hot Diseases, in defect of better Nourishment, it may by a perfecter Elaboration quickly assume the substance of Blood: And by Experience we find, that cold and crude Nourishment makes the Humour abound more in Winter than in Summer, and more in aged People (for want of a per-

fect Digestion) than in the younger sort; and, by reason of the similitude Phlegm hath with the Season and Age, it makes People drowzy, dull, fat, and hastens grey Hairs.

Choler is as it were a certain Heat or Fury of Humours, which, generated in the Liver with the Blood, is carried by the Veins and Arteries thro' the whole Body; and that of it which abounds is sent partly into the Guts, and partly into the Bladder of the Gall, or is consum'd by Transpiration or Sweating. This Humour is term'd the *Fire of the Body*; for it makes Men in whom it abounds nimble, quick, and ready for Performance, but frequently subject to Anger, yet causeth a quick Digestion.

The *Melancholy* Humour is the Dross or grosser part of the Blood, partly sent from the Liver to the Spleen to nourish it, and partly carried by the Vessels into the rest of the Body, and spent in the nourishment of the Parts endow'd with an earthly dryness. It is made of Meats of gross Juice, and by the Perturbation of the Mind turn'd to Fear and Sadness, usually augmenting in Autumn and the first Crude of Old-age, producing many fatal Accidents where it overmuch predominates, making Men sad, harsh, inconstant, froward, envious, and very fearful.

Q. What Motions are in each Part of the Body?

A. It is the Opinion of *Aristotle*, and other learned Philosophers, that the Humours are wont to move at a set Hour of the Day, as by a certain peculiar Motion or Tide; that the Blood flows from the ninth Hour of the Night to the third Hour of the Day, then the *Choler* to the ninth of the Day, the *Melancholy* to the third of the Night, and

and what remains is under the Dominion of the Phlegm.

Q. What are those Humours that are call'd Humours against Nature in the Body?

A. They are such, which being infected, corrupt the Body and the Parts in which they are contain'd, by the Contagion of their Corruption, retaining the Names and Titles of the Humours, from whose Purity and Putrefaction, tho' they were formerly by their own Nature cold, as being corrupted either in the Veins only, or within and without the Veins; within the Veins *Blood* and *Melancholy*, but without and within the Veins *Blood* and *Phlegm*.

Q. Into what Humour does the Blood degenerate when it is corrupted?

A. When the *Blood* is corrupted in its thinner part, it turns into *Choler*; when it is thicker, into *Melancholy*; for the *Blood* becomes faulty two manner of ways, either by the Corruption of its proper Substance by Putrefaction, or by admixtion of another Substance by Infection; and these if not timely taken care of, become dangerous to Health, and if much prevailing, end oftentimes in Death, or at least some sad languishing Disease.

Probl. II. Of the several Complexions and Planetary Governments.

Q. NOW, that the Body may be rightly order'd and approaching Dangers foreseen and avoided, tell as briefly as you can the Signs and Symptoms of the several Humours treated of.

A. The Signs of a Sanguine Person is manifest when the Matter and Generation of Flesh is prime

tipally from *Blood*, that a Man of a fleshy, dense, and solid Habit of Body, full of Vaporous Juice, is of a sanguine Complexion. It is further known by a mixture in the Complexion of a curious white and red ; white, because of the Skins lying outmost ; and red, by reason the Blood has a free Passage to spread under the Skin ; for always such as the Humour is, such is the Colour in the Face.

Cholerick Persons are of a pale or yellowish colour, subject to Leanness, slender, and of a rough Habit of Body, with fair Veins, large Arteries, a strong and quick Pulse ; their Skin being touch'd feels hard, rough, and harsh, with a pricking and acid Exhalation, which breathes forth of their whole Body : They cast forth much Choler by Vomit, Stool, or Urine.

The Phlegmatick Person is known by a whitish Aspect, and sometimes livid and swoln, the Body fat and cold : They often dream of Rain, Snow, Floods, swimming in deep Waters, &c. which are Signs of a Phlegmatick Constitution ; as also Dullness, Drowsiness, and Sloth, with often rumbling and noises in their Bellies.

Those that are Melancholy, the Signs are, a swarthy Complexion, a clouded Countenance, a hasty Temper, a wrinkled Forehead very early, with often frowning and contracting of the Brows, Musings, and Melancholy Thoughts, troubled Sleeps ; with Moans, Startings, and often Cryings out by reason of frightful Dreams and fancied Apparitions of Devils, Spectres, Hobgoblins, and the like.

Q. Is it the Opinion of Philosophers, that the Constellations or Planets Men are born under, or that predominate at their Nativities, cause this

dispo-

difference in their Complexion and Constitution ?

A. Philosophers, and with them the learned Astrologers and Physicians, agree in this, That those who are born under *Jupiter* or *Sol* are Sanguine, those under *Mars* Cholerick, those under *Luna* Phlegmatick, those under *Saturn* Melancholy, those under *Mercury* and *Venus* are of mixed Complexions, more or less inclining to any of the Four in particular, as those Planets at that time may happen to be in Conjunction with them, or make their Approaches near, or retire more distant from them : And this is visible in divers Persons that have a mixture of Complexions, which sometimes vary, but never altogether change.

Probl. III. Of the Faculties ; how they operate and perform their several Functions in Men Women, &c.

Q.W *What are those we call the Faculties ?*

A. A Faculty is a Power and efficient Cause proceeding from the Temperament of the Part, and the Performer of some Action of the Body.

Q. *How many are they that may be so term'd ?*

A. There are three principal Faculties governing Man's Body, so long as it enjoys its Integrity, viz. the Animal, Vital, and Natural.

Q. *In what Parts or Places are they seated ?*

A. The Animal is seated in the proper Temperament of the Brain, from whence it is distributed by the Nerves into all Parts that have Sense and Motion ; and this again is of three Kinds, for one is moving, the other sensitive, and the third principal : The sensitive consists in the five Senses.

Senses, *viz.* Sight, Hearing, Smell, Taste, and Touch: The moving principally remains in the Muscles and Nerves, as the fit Instruments of voluntary Motion: The principal comprehends the Reasoning Faculty, the Memory and Fancy; and tho' *Galen* would have the common inward Sense to be comprehended within the compass of the Fancy, yet *Aristotle* distinguishes between them. The Vital has its Seat in the Heart, from whence Life and Heat is distributed by the Arteries to the whole Body.

Q. Does there not often happen Obstructions to these so useful Faculties, to hinder their Office or Operation in the Parts?

A. Yes, this last is principally hinder'd in the Diseases of the Breast, as the Principal is when any Disease assails the Brain.

Q. What is the prime Action of the Vital Faculty?

A. The prime Action is Pulsation, and that continued Agitation of the Heart and Arteries which is of a threefold use to the Body; for by the dilatation of the Heart and Arteries the Vital Spirit is cherish'd by the benefit of the Air which is drawn in; by the contraction thereof the Vapours of it are purg'd and sent forth, and the native heat of the whole Body is temper'd by them both.

Q. How operates the Natural Faculty? And to what End serves it?

A. This Faculty has its principal Seat in the Liver, and spreads or carries the Nourishment over the whole Body, but is distinguish'd into three other Faculties, *viz.* the Generative, which serves for the generating and forming the Womb; the growing and encreasing Faculty, which flourisheth from

from the time the *Embryo* is form'd, until the perfect growth of the solid Parts into their full dimension of length, breadth, and height ; the nourishing Faculty repairs and repays the continual Efflux and Waste of the threefold Substance ; for Nutriment is nothing else but a refreshing or repairing whatsoever is wasted or emptied, and endures from the time the Infant is form'd in the Womb, to the end of Life.

Q. By what degrees is Nourishment assimilated ?

A. The Nourishment that supports our Bodies, and preserves Life and Health, is assimilated or attain'd by these Degrees, *viz.* first, it must flow to the Part, then be join'd to it, then agglutinated, and then assimilated ; and this is contributed to the Concoctions of the Stomach, one whereof is thick, the other thin : The first of these remains, turning Humours and Nourishment into Blood ; the other being thin, light and airy, soon transpires by the Pores and other Parts.

Probl. IV. Of the Actions, Natural and Voluntary, Generation, Growth, Nutrition.

Q. What are the Action or Actions of the Faculties ?

A. Actions are twofold, for they are either Natural or Voluntary : They are term'd Natural, because they are not perform'd by our Will, but of their own accord, as are the continual Motion of the Heart, the beating of the Arteries, the expulsion of the Excrement, and such other Things as are done in us by the Law of Nature, whether we will or no : These Actions flow either from the Liver and Veins, or from the Heart and Arteries

wherefore we may apprehend them under the Names of Natural and Vital Actions, for we must attribute each to his Faculty, lest we seem to constitute an idle faculty, and no way profitable for use. The involuntary & vital Actions are the dilatation and contraction of the Heart and Arteries, which are comprehended under the Name of *Pulse*; by that they draw in, by this they expel and drive forth. The involuntary and vital Actions are Generation, Growth, and Nutrition, which proceed from generating, growing & nourishing Faculties.

Q. What is Generation?

A. It is no more than a certain requiring or producing Matter, and the introducing a substantial Form into that Matter: And this is perform'd by the assistance of two Faculties, the altering which do diversly prepare and dispose the *Seed* and *menstruous Blood* to put on the form of a Bone, Nerve, Spleen, Flesh, and suchlike of the forming faculty, which adorns with Figure, Sight and Composition the Matter order'd by so various a Preparation.

Q. What is Growth? Or, by what degrees is it proportion'd?

A. This is an enlargement of the solid Parts in all the dimensions, the pristine or ancient form remaining entire in Figure and Solidity; for the Perfection of every Growth is judg'd only by the solid Parts; for if the Body swells into a Mass of Flesh or Fat beyond the intended Dimension of Nature's appointment, it cannot properly be said to be grown; but it may be when the solid do in like manner encrease, especially the Bones, because the growth of the whole Body follows their encrease, tho' at the same time it waxes lean, and dries away.

Q. What

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Q. What is Nutrition perfectly distinguish'd by?

A. It is a perfect Assimilation of that Nourishment which is digested into the Nature of the Part which digests, and is perform'd by the Assistance of four subsidiary or helping Actions, *viz.* attractive, digestive, retentive, and expulsive.

Q. How is the Sight perform'd?

A. This is an Action of the Seeing Faculty, perform'd by the Eye, fitly compos'd of its Coats and Humour, and so consequently the Organical Body of this Action. As for the Object, it must be a visible Quality brought to the Eye; but such an Object is twofold, for either it is of itself absolutely visible, and by its own Nature, as all Lights are, or desires as it were the help of another, that it may be actually such; for so, by the coming of the light Colours, which were visible in Power only, being brought to the Eye, they seem and appear such as they actually are; but such Objects cannot arrive at the Eye, but thro' a clear illuminating Medium, as the Air, Water, Glass, and all sorts of Crystal.

Q. By what means do we hear Sounds, and so exactly distinguish them one from another?

A. The Ear is the Organ by which the Sound enters, which has a Passage that leads to the Stony-bone, furnish'd with a Membrane investing it, an Auditory Nerve, and a certain inward Spirit there contriv'd. As for the Object, it is every Sound arising from the smitten or broken Air, which carries the Sound to the Ear, where entering, it is convey'd to the Sensitive Faculty in the Brain, which distinguishes it, and records it upon the Memory and Fancy.

Q. By what means do we smell Odours, and distinguish Scents of various kinds?

A. *Galen* and others are of Opinion, that this is perform'd in the Mamillary Process, produced from the proper Substance of the Brain, and seated in the upper part of the Nose; but some oppose this, concluding it should rather be made in the foremost Ventricle of the Brain. This Action is weak in Man, if compar'd with many other Creatures: The Object of it is every Smell or fuming Exhalation, or breathing out of Bodies. The Medium by which it is carried to the Noses of Men, Beasts, Birds, &c. is the Air; but to Fish it is carried by the Water, which yet contains in it a thin fluid Air, always in motion, more or less, as the Agitation of the Air above it attracts or depresses it.

Q. *How comes it that there is so exquisite a Sense in Tasting, that we can easily distinguish Meats, Sauces, Fruits, and other things by it, without seeing them?*

A. The Action of Tasting is perform'd by the Tongue, when it is in good temper, and not disorder'd by any evil Humour or Thing, to dull and paul it in the performance of its Function; for this useful Member has a Nerve spreading over its upper Part, from the third and fourth Conjugation of the Brain. The Object is the Thing we taste. The Medium by which the Object is so carried to the Organ, that it may affect it, is either External or Internal; the External is the Spittle that flows to supple the Tongue; the Internal is the spongy Flesh of the Tongue it self, which, affected with the quality of the Object, doth presently so possess the Nerve it self, that the Kind and Quality thereof, by the force of the Spirit, may be convey'd unto the common Sense.

Q. *How*

Q. How comes it that we feel the least thing we touch, or that touch us in any Part, even Things not to be seen, as well as solid Bodies, as Air, Heat and Cold, &c?

A. This Sense of Feeling is caus'd by the Nerves, which are very sensible when any thing presses them, tho' never so lightly; so that all Parts endow'd with a Nerve enjoy the Sense of Feeling, which is chiefly done when a tractable Quality penetrates to the true and nervous Skin, which lies under the Cuticle or Scarf-skin; and 'tis much more exquisite in the Skin that invests the ends of the Fingers, than it is in any other Parts.

The Object of every tractable Quality, whether it be of the first rank of Qualities, as Heat, Cold, Moisture, Dryness, &c. or of the second, as Roughness, Smoothness, Heaviness, Lightness, &c.

The Medium is either the Flesh or Skin, or both, interwoven with many Nerves, &c.

Probl. V. Of Voluntary Motion and Respiration, the third Principal Action, &c.

Q. What is that Motion which by a particular Name we call Voluntary? And how is it caused?

A. It is a Motion perform'd and accomplish'd by the Muscles, which are the proper Instruments of Voluntary Motion. And further, every Motion of a Member possessing a Muscle is made either by Binding and Contraction, or by Extension; tho' generally there are so many differences of Voluntary Motion as their Sight in Place; therefore Motion is said to be upwards and

and downwards, to the Right Hand, and to the Left, forward and backward ; and hither are refer'd the many Kinds of Motion that the infinite variety of Muscles make in the Body.

Q. What is Respiration or Breathing? And how term'd to operate in Men and Women?

A. This is properly rank'd among Voluntary Motions, because it cannot be done without the help of the Muscles, altho' its chief End is to temper the heat of the Heart ; for we can make it slow or quick as we please, which are the Conditions of a Voluntary Motion.

Secondly, That we may more clearly conceive the Cause of it, it must be allow'd that Respiration is undergone and perform'd by the Animal Faculty, but chiefly instituted for the help of the Vital.

Q. What is the third principal Action, and prime amongst the Voluntary?

A. This is absolutely divided into three distinctions, viz. Imagination, Reasoning, and Memory.

Q. How do you define Imagination?

A. Imagination is a certain Expression and Apprehension, which discovers and distinguishes between the Forms and Shapes of Things sensible, or such Things as are known by the Senses.

Q. How is Reasoning to be understood or defin'd?

A. It is a certain judicial Estimation of conceiv'd or apprehended Forms or Figures, by a mutual collating or comparing them together.

Q. What is Memory? And how is it defin'd?

A. This is a sure Storehouse of Things, and as it were the Treasury which the Mind often unfolds, and opens the chief Faculties of the Mind, being idle and unemploy'd ; nay, even in Sleep

the Memory is wakeful, and takes the Impression of Dreams, or Words we utter (or think we utter) in Sleep, and so being stamp'd on the Memory, we remember them waking.

Probl. VI. Of the Animal, Vital, and Natural Spirits.

Q. *What is the Spirit whereby Life subsists in its general Term?*

A. It is defined to be an airy Substance, very subtil, rais'd from the purer Blood, that it might be a Vehicle for the Faculties, by whose Power the whole Body is govern'd to all its Parts, and the prime Instrument for the performance of their Office; for they being destitute of its sweet Approach, presently cease from Action, and remain as dead, resting from their accustom'd Labours: And hence it is making variety of Spirits according to the number of the Faculties: The Learned have divided them into three, *viz.* Animal, Vital, and Natural.

Q. *How do you account of the Animal Spirit?*

A. It has its Seat in the Brain, and is there prepar'd and made, that (being from thence convey'd by the Nerves) it may impart the Power of Sense and Motion to all the rest of the Members, and is call'd *Animal*; not because it is the Life, but the prime or chief Instrument of it; wherefore it has a more subtile and airy Substance, and enjoys diverse Names, according to the various condition of the Seats of the Senses, into which it enters, communicating its Power very largely.

Q. *Of what is this Spirit made or form'd?*

A. The Animal Spirit is made and labour'd in the Windings and Foldings of the Veins and Arteries of the Brain, of an exquisite subtil Portion of the Vital, brought thither by the Carotid (or slee-py) Arteries : And sometimes of the pure Air or sweet Vapour drawn by the Nose in breathing. Hence it is, if any Humour obstructs or stops its passage, the Members situate under that place languish, and seem dead, sometimes destitute of Motion, and sometimes of that and Sense too.

Q. In what place have Vital Spirits their chief Seat ? and, How do they perform their Function ?

A. The Vital Spirit is next to the Animal in Dignity and Excellency, and holds it principal Seat in the left Ventricle of the Heart, and thence thro' the Channels of the Arteries it flows into the whole Body, to nourish the Heat that resides fixt in the substance of each Part, which would in a short time perish, if it were not refresh'd with Heat flowing thither together with this Spirit. And because it is the most subtil next to the Animal Nature, lest it should vanish away, it is contain'd in the Nervous Coat of an Artery that is five times thicker than the Coat of the Veins, as *Galen* shews.

Q. What is the Matter and Substance of this Spirit ?

A. It is furnish'd with Matter from the subtile exhalation of the Blood, and that Air which we draw in breathing ; wherefore as it doth quickly and easily perish by immoderate dissipation of spiri-tuous Substance and great Evacuations, so it is easily corrupted by the putrefaction of Humours, or the breathing in of pestilential or noxious Va-pours ; which thing is the Cause of the sudden Death of those that are infected with the Plague :

And

And when 'tis obstructed, many dangerous Diseases are the Attendants of it.

Q. What is the Natural Spirit, and its Office ?

A. Of this some of late have seem'd to doubt, tho' *Aristotle, Galen, and Hippocrates* have wrote concerning it, and briefly, That it hath its station in the Liver and Veins, being more gross and dull than the two foregoing, and inferiour to them in dignity of Action, and excellency of the Use, its chief Function being to help the concoction both of the whole Body, and also of every Part.

Probl. VII. What Sex is ; the Nature of Women, Eunuchs, and Hermaphrodites.

Q. What is that we call Sex ? And, in what is the Nature of Woman different from that of Man ?

A. As for the Word *Sex*, 'tis no other than a distinction of Male and Female ; in which this is most observable, that for the Parts of the Body, and the sight of these Parts, there is but little difference between 'em ; but the Female is colder than the Male, and abounds with more superfluous Moisture ; wherefore their Spermatick Parts are more cold, soft, and moist, and all their natural Actions more vigorous and less deprav'd than those of Men. But of this more largely when we come to resolve Questions relating to Generation, &c. in their proper Place.

Q. What are those we call Eunuchs ?

A. Men castrated (*i. e.* depriv'd of Genitals) and so incapable of Generation. These, for want of their natural Vigor, are much colder than Men not so depriv'd, and their Nature is to be referr'd

18 New and useful Problems.

to that of Women, as being degenerated into a Womanish Nature by the deficiency of Heat: Their smooth Faces, and soft and shrill Voices, do very much assimilate Women, and rarely they have any Beard.

Q. What is that we call a Hermaphrodite?

A. Nature design'd it in the Womb for a Male only, as working up for the best, and ever aiming at the highest Perfection of its Workmanship, but too much Cold and Moisture accidentally falling into the work before it could be perfected in the Womb, with too great a quantity of Seed and menstruous Blood, what was intended for Man in part degenerates; and renders the Infant of a double Sex or Nature, placing it in the middle of both Sexes, as seeming to participate of male and female. Some of the Ancients were of Opinion that there is a certain Cell in the Womb, especially of some Women, into which the Seed falling when *Mercury* and *Venus*, or *Mercury* and *Luna* are in *Conjunction*, an Hermaphrodite is engender'd. And indeed, in *Turkey*, and other Eastern Countries, where those Planets have the greater influence, they are more numerous than in the western parts of the World, going in a different Habit from other People, to prevent their lying with any; and if they go without those Habits, they are severely punish'd.

Q. How may Carnal Copulation be defined?

A. It is a mutual Action of Male and Female with convenient Instruments ordain'd and deputed for the work of Generation, to encrease or multiply the Species and Kind of every Creature, by propagating Likeness, there being no other Means to effect it.

Q. Whence

Q. Whence comes it that those who are born deaf are also dumb, and unable to express Words?

A. This happens thro' a defect of the Organs of the Ears, the Drum being broken on which the Sound of the Air should bear; or the passage stopt up with some fleshy Substance, that no Sound can pass to the Hearing Faculty seated in the Brain, as we have before describ'd, and if Sounds cannot be distinguish'd, Expressions can't be framed so as to be distinguish'd, tho' there is no defect in the Tongue, which we find by the confused Noise some make; they are willing and desirous to speak, but know not how.

Probl. VIII. Of the Passions of the Mind, and their Force on Human Bodies.

Q. WHY are the Passions of the Mind call'd Accidents? And what is their force?

A. These kind of Perturbations are call'd *Accidents of the Mind*, as Bodily Accidents are call'd *Accidents of the Body*; and these may be present or absent from the Mind without the corruption of the Subject, and can stir up Troubles and Disorders in the Body, as well as in the Mind, as in case of Joy, Hope, Love, Fear, Anger, and Sorrow we apparently find it; for by these Motions the Spirits are sometimes violently, sometimes gently diffused over all the Body, and then in case of the three first especially, the Heart is dilated so as to embrace the thing wish'd for or belov'd; and the Face is dy'd with a rosy and lively colour; for it is likely the Faculty it self is stirr'd with the Object, by whose power the Heart it self is mov'd.

Q. From whence have the Passions of the Mind their force?

A. It certainly must be necessary, before we be mov'd to any Passion, that the Senses in their proper Seats (in which they are seldom deceiv'd) apprehend the Objects, and immediately (as Messengers) convey 'em to the Senses, which send their conceiv'd Forms to all the Faculties, that each Faculty, as a Judge, may afresh examine the whole matter, how it is, and conceive in the present Object a shew of Good or Evil, to be desir'd or shun'd. For what Man in his Wits, or of any tolerable Sense, ever fell into an extravagant Laughter, without conceiving something to cause it?

Q. Wherefore do the first Signs of Passions of the Mind appear in the Face?

A. The Signs of these Passions quickly shew themselves in the Face, because the Heart, by reason of the Skin, partly as it were paint forth the Notes of its Affections; for the Face is a place so fit to disclose all the Affections of the inward part that by it you may visibly know a Woman from a Man, and those that are old from those that are young, a temperate Person from one that is intemperate, Mirth from Sadness, Sickness from Health, and the like; wherefore Philosophers affirm, That the Manners, and those things we would keep secret and hidden in our Hearts, may nevertheless be understood by the Countenance, where an ingenious Person makes a narrow Scrutiny.

Q. What is Joy; and the Reason of it?

A. Joy is an enlivening Passion proceeding from the Heart; for, the Thing causing Mirth or Joy being conceiv'd, the Faculty moves the Heart, which being shaken and mov'd by it, hath dominion over it, and is dilated and open'd as ready to embrace the exhilarating Object; but in the mean

mean time, by the force of that dilatation, it sends forth much Blood and Spirits together through all the Body, a great quantity of which coming to the Face, dilates it: The Forehead is smooth and plain, the Eyes look bright, the Cheeks are over-spread with a comely Blush, the Lips and Mouth are drawn together, and made smooth.

Q. What are the Effects of Joy?

A. That which sweetens Life, recreates and quickens all the Faculties, stirs up the Spirits, helps Concoction, fattens and makes the Body in a better liking, causing the Heat, Blood, and Spirits to flow freely, and with a kind of nourishing Dew and Moisture watering all the Members from whence it is: Of all the Passions of the Mind (if not too immoderate) this only is profitable; for immoderate and unaccustom'd Joy carries the Blood and Spirits of the Heart into the Habit of the Body so forcibly, that leaving the Heart naked and destitute of Succour, it has often dy'd away, thro' the sudden decay of Strength, the lasting Fountain of the Vital Humour being exhausted; which thing principally happens to those that are less hearty, as Women and Old Men: And indeed some have dy'd in a Fit of Laughter.

Q. What is Anger? And from whence arising, as to the Natural Cause?

A. Anger, tho' a Passion opposite to Love, yet it carries as great a Fire with it, if not greater, and is far speedier than Joy in its Emotions; therefore the Spirits and Humours are often so inflam'd with it, when it grows to excess, that it often causes putrid Fevers, especially if the Body abounds with ill Humours. It is more predominant in Persons who abound with Choler, than in others; and

next to them, in the Melancholy, when a peevish Humour stirs up a Passion in 'em, or some distaste occasions it.

Q. What are the Effects of Anger ?

A. It is a profest Enemy to Reason, Counsel, or Advice, being a noisy Loudness, in which none of those can be heard ; nor is it to be suppress, but by something that is as inveterate as it self, or more inward and habitual ; so that we may conclude this (of all Passions) chiefly endeavours to render Reason useless. It surpasses Envy ; for there are many things in the World so miserable and contemptible, that they are below Envy ; but Anger (once let loose) quarrels with every thing, nay, even with the angry Person ; for it not only torments the Mind, but in a little time maketh a beautiful Face monstrously deform'd and contemptible, rendering the Voice of an unpleasing sound, and the Eyes fiery and staring : In some it causeth paleness, in others a fiery red, the Mein and Gesture fierce and threatening, yet frequently very antick, the Speech loud and clamorous, always fine, 'tis neither heroick nor ingenuous, always (or for the most part) proceeding from Pusillanimity, or softness of Spirit ; which makes Women more subject to it than Men, by reason their Minds are easier mov'd and agitated, as old People are more peevish (and consequently easier vext) than young : And 'tis so unreasonable a Passion, that it spares neither Friend nor Foe ; it makes Marriage an irksome and uncomfortable State ; Friendship, Societies, and Familiarities to be intolerable ; and turns Power into Insolence, Justice into Cruelty, and Judgment into Oppression ; 'tis a confluence of all the irregular Passions, for in it there's Envy
and

and Malice, Fear and Scorn, Pride and Prejudice, Rashness and Inconsideration.

Q. What are the Nature and Effects of Sorrow and Grief?

A. They are Enemies to Nature, for they dry the Body by a quite contrary way to that of Anger, because by these the Heart is so straitned, the heat being almost extinct, that the accustom'd heat of generation of Spirits cannot be perform'd; and if any be generated, they cannot freely pass unto the Members with the *Blood*; wherefore the vital Faculty is weaken'd, and the lively Colour of the Face withers and decays, the Body dries, and the Marrow wastes by a lingering Consumption, if it be of any long continuance.

Q. What are Effects of Fear?

A. This, where 'tis too frequent and of long continuance (as the foregoing) draws in and calls back the Spirits, not by degrees, as in Sorrow, but all on a sudden, and that so violently, that the Face grows pale, the extream Parts cold, all the Body trembles and shakes, the Belly (in some) is loosed, the Voice as it were stays in the Jaws, the Heart beats with a violent Pulsation, because 'tis almost oppress'd by the Heat, and strangled by the plenty of Blood and Spirits abundantly rushing thither from the outward parts; the Hair is erect, because the Heat and Blood are retir'd to the inward parts, and the utmost parts being left cold and dry, the Skin and Pores in which the Roots of the Hair are fix'd, are drawn together, which causes Erection.

Q. What is Shame or Shamefacedness? And what Effects doth it produce?

A. This by many is term'd a Passion of the Mind, and is an Affection mix'd as it were with *Anger* and *Fear*; therefore if in that Conflict of contending Passions *Fear* prevails over *Anger*, the Face becomes pale, and the *Blood* retreats to the Heart: And these Symptoms arise according to the vehemence of the contraction of the abated Heart. But if, on the contrary, *Anger* obtain the dominion, (as perhaps when a Woman is surpriz'd naked, or in any indecent posture) the *Blood* flows violently to the Face, the Eyes are red, and Blushes overspread the Cheeks with a rosy hue.

Q. Is there not another kind of Shamefacedness?

A. There is a lesser degree, and that the *Latins* call *Verecundia*, in which there is a certain flux and reflux of the *Heat* and *Blood*, first recoiling to the Heart, then immediately rebounding from thence again; but that Motion is so gentle, that thereby the Heart suffers no oppression nor defect of Spirits; wherefore no Accidents of Note arise thence. And this Effect is familiar to Maidens and Boys, who suddenly blush if taken in a fault, or doing an unseemly thing; or in Cases of Love, upon the discourse of, or the beloved Objects approach; 'tis concluded to be an Argument of a virtuous and wise Disposition.

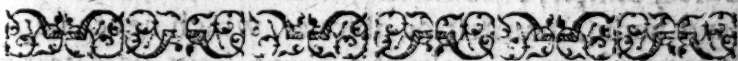
Q. What is that we call an Agony, which is reckon'd among the Passions of the Mind?

A. It is a mix'd Passion of a vehement Anger and strong Fear, which involves the Heart in the danger of both Motions; wherefore by this Passion the vital Faculty is brought in great danger.

And to these six Passions of the Mind all the rest may be oppos'd; as, Hatred and Discord, to Anger; Mirth and Boasting, to Joy; Terrour, Frights,

Frights, and Swooning, to Fear ; Envy, Despair, and Mourning, to Sorrowing, &c.

Now from these things let us proceed to such as more particularly relate to the substantial Parts of Men, Women, and Children, wherein many rare Secrets will be disclos'd, to the Advantage of the Reader, for the Improvement of Knowledge or Practice.



PROBLEMS of Accidents.

Probl. IX. *The several Parts of Men and Women, relating to the deepest Mysteries and Secrets of Nature, in framing so admirable a Structure ; with many things tending to Generation, and the Formation of the Embryo in the Womb, Secret Parts, &c.*

Q. *What is a Part, according to Galen, (in his Book de Usu Part. Lib. 1. Meth. 1.) which he mentions as it stands stated relating to a Human Body ?*

A. I understand nothing else by Part but some certain Body which is not wholly disjoin'd, nor wholly united with some other Bodies of their Kinds, but so that (according to his Opinion) the whole is compos'd therewith, and with which it is in some sort united, and in some kind separated from the same. By their proper Circumspection, or by the Parts in general, I understand the Head, Breast, and Members ; and by the particular Parts of these, are to be understood the Simu-

lar Parts, Nine in number, viz. *Gristle, Bone, Ligament, Tendon, Membrane, Nerve, Vein, Artery, and Muscular Flesh*; tho' some add *Fibres, Fat, Marrow, Nails, and Hair*, others admit them as only Excrements. But we must note, such Parts are call'd *Simple* rather in the Judgment of Sense than of Reason; for if they will more diligently consider their Nature, they shall find none absolutely *Simple*, because they are nourish'd, have Life and Sense, manifest or obscure, which never happens without the help of a *Nerve, Vein, or Artery*.

Q. How comes it the Opinion of some, who profess themselves knowing, That no Nerve is communicated to any Bone, except the Teeth? And how then can any Bone have the Sense of Feeling, Teeth excepted?

A. Tho' this may be deny'd by some, nevertheless common Reason teaches us, that the Bones have a Sense of Feeling communicated by the nervous Fibres which extend to them from the *Periosteum*, as by whose mediation the *Periosteum* is connex'd to the Bones, (as we see it happens to those Membranes that involve the Bowels) and the Bones by this Animal Sense expel the noxious and excrementitious Humours from themselves into the spaces between them and the *Periosteum*, which indeed with a more quick sense admonishes us (according to its Office and Duty) of that Danger which is ready to seize upon the Bones, unless it be prevented: Wherefore, according to the truth of the thing, we must conclude that there is no Part in our Body *Simple*, but that only some are so nam'd and thought, according to the Sense; altho' also otherwise some may be truly nam'd *Simple*, as according to the peculiar and proper Flesh of each of their Kind; and those Parts are call'd

call'd *Compound*, which are made and compos'd by the mediation of the *Simple*, which some term *Organical* or *Instrumental*, as a Leg, Foot, Arm, Hand, and others of this kind. And of this Opinion is *Aristotle*.

Q. Why is not the Belly bony as well as other Parts?

A. Because Nature would not have this lower Belly bony, that the Ventricle might be the more easily dilated by Meat and Drink, Children might grow the better, and the Body be the more flexible.

Q. Why is it when the Liver is hot, the Stomach is commonly cold?

A. This happens when by too forward a Digestion the heat is carry'd from the Stomach to the Liver with too great a precipitation, as mingling with the Chyle, which carries off the bilious Matter or Humour to inflame the Liver, before it can perfect and distribute the Blood into the Veins; and by so great an Evacuation the Stomach being drein'd of its Juice, is left cold, till Heats returns from the Heart to fortifie it, after the Blood is fully made and distributed by the Liver into the Veins.

Q. Why, if a Man or Woman has the Palsie on one side, is it not presently communicated to the other, and sometimes never?

A. Because the *Septem Lucident* in the Brain is nothing but a Portion of the Brain, not indifferently solid, but very solid, making a Partition, and thro' that Partition the Animal Spirits contain'd in the two Ventricles may mutually pass and be communicated, tho' no other gross Substance can penetrate the thin density thereof; from whence it is that the Water contain'd in one of the Ventricles, tho' near to the other, has no Power

to pass the other thro' this Partition; so that the Ventricle on that side the Palsie is on will be much dilated, according to the quantity of the Water contain'd in it, which causes the Palsie, when the other will be empty; so that the Water causing the Palsie, by reason of its coldness, can proceed no farther than that Ventricle has Power to effuse it on the Nerves, and where it affects them, the Palsie ensues; so that one part of the Body or Member may be active and lively, whilst the other is numb'd, and as it were senseless.

Q. Wherefore is it the Hickup ceases when one holds one's Nose, and ceases to breathe, or that any sudden Fright happens?

A. Because it proceeds from a sudden difficulty in breathing, and that holding our Breath, it must be of necessity that a little after we must breathe by course; also we being made attentive to what we fear, it makes us hold our Breath; and sometimes by fetching a deep Sigh it is staid on a sudden.

Probl. X. Problematical Questions and Answers relating to the several Parts of the Bodies of Men and Women, both Internal and External.

I. Of the Heart.

Q. What is the Heart of Man? And of what Substance?

A. It is the Seat of the vital Spirits, or Organ of the vital Faculty, and the beginning of Life, so consequently the continual Nourisher of the vital Heat, as first living, and last dying, which because it must have a natural Motion of Life, was made of a dense, solid, and more compact Substance than any other part of the Body.

Q. What is its Magnitude and Figure ?

A. It is of an indifferent bigness, yet in some big, in some less, according to the divers Temper of Cold or Heat that are prevailing.

The Figure is Pyramidical, that is, broad in the Basis, and narrow at its round Point.

Q. What is more immediately its Office ?

A. It is first to prepare the Blood in its Right Ventricle for the Nourishment of the Lungs; secondly, to generate the vital Spirits in its Left Ventricle for the Use of the whole Body, giving Life and Heat.

2. Of the Lungs.

Q. What are the Lungs, and their proper Office ?

A. The Lungs are of a soft Substance, and fleshy, like a Sponge, of a various colour. Their quality is sufficiently large, for most commonly they are divided into four Lobes, disjointed with a visible Separation, on each side two, whereby they may be the more easily open'd and contracted, that the Air may enter with more facility: And in some that have a large Chest there is a fifth Lobe found, arising from the second Lobe on the right side, as a Cushion or Bolster, to bear up the hollow Vein ascending from the Midriff to the Heart.

As for their Office, 'tis to cool and temper the raging heat of the Heart, for 'tis cool'd by drawing in the cool Air, and by sending it out, avoiding the hot fuliginous Vapours; therefore the Chest in which they lie performs two contrary Motions; for when it is dilated it draws in the encompassing Air, and when it is deprest it expels the fuliginous Vapours of the Heart.

3. Of the Liver.

Q. What is the Liver, and its proper Office ?

A. It is of a concrete fleshy Substance, compos'd of Lobes spreading under the Heart, and having Communication with the Stomach, to communicate Heat to it for Digestion and Concoction, and then to attract the Chyle or Nutrition, that it may concoct it into Blood and Humours distributed by the Veins, of which it is the Fountain, as the Heart is of the Arteries to the Brain, and all other Parts, for the Support of Nature and the Sustainance of Life; this Blood being in a perpetual Motion, ebbing and flowing, unless some Accident hinder, and then Diseases, and sometimes Death, ensue, by reason of that Stagnation.

4. Of the Brain.

Q. What is the Brain, and its proper Office?

A. The Brain is the beginning of the Nerves and voluntary Motion, the Instrument of the first and principal Faculty of the Soul, that is, the Animal and Rational.

Man hath in this Part greater Plenty than any other Creature, because it near fills the whole Scull, only a space is left for its Motion, for it is dilated and contracted in the Scull, being of a cold Temperature. The laudable Temper of the Brain is known by the Integrity and Perfection of the Internal and External Senses, the indifference of Sleeping and Waking, the maturity or ripeness of Judgment.

Its Office or Action is to elaborate the Animal Spirits and necessary Sense, serving the whole Body, and to subject it self as an Instrument to the principal Faculties, as to Reason. The Brain is twofold, the fore and hinder.

The hinder, by reason of its smallness, is called the *Cerebellum*, the little or After-brain: The fore,

fore, by reason of its magnitude, hath retain'd the absolute Name of *the Brain*. As for the fore Brain, it is twofold, the Right and the Left, parted by two Depressions of the Meninges into the Body of the Brain. The outward Surface of the Brain is soft, but the inward is hard, callous, and very smooth; when on the contrary the outward appears indented and unequal, with many windings, and crested as it were with many Worm-like foldings: And from the Brain, as from their Fountain, proceed the Sinews and Nerves which give Motion and Strength to their Body and Members.

5. Of the Head in general.

Q. *Why is the Head seated in the highest Place?*

A. Because the Senses are placed in it, from whence, from a Fountain, infinite Actions and Commotions arise. It is seated above the rest of the Body, that the Animal Spirits from thence may (as in a chief Citadel) govern and moderate the rest of the Body, and regularly perform all Actions according to the Prescript of Nature: And by the *Head* is to be understood all that which is contain'd from the Crown to the first *Vertebra* of the Neck.

The best Form or Figure is round, lightly flat on each side, extuberated something to the fore and hinder Parts, for from hence it takes an Argument of the Goodness of the Sense; when, on the contrary, those that are exactly round, or accumulate and sharp towards the top, are not held so good in the Performance of their Office; and the division of it is into the Face, Forehead, and Temples, the Fore-part, the Crown, and the Hinder-part.

6. Of the Hair.

Q. Why does Hair grow upon the Head more than on any other Part, and the Cause of it?

A. First, Because the Brain is moist, and the Hair being an Excrement generated and form'd of the most gross and earthly Superfluities of the third Concoction, which cannot be wasted by insensible Conspiracy; the Benefit of it is, that consuming the gross, fuliginous, and sooty Excrements of the Brain, it becomes a Cover and Ornament to the Head, and finding there its most proper matter for encrease, it grows very long, especially in Women, who have moister Brains than Men.

Q. Why does Hair grow in other Parts?

A. The Hair of the Head and Eyebrows have their Original from the first formation of the Infant in the Womb, the rest grows as the Body does, and becomes more dry.

7. Of the Teeth.

Q. How many Teeth are fixed in the Mouth, and of what Nature?

A. Those who have their full Complement or Number have Thirty-two, equally divided above and below, of which in the fore-part of the Mouth there are Four above, and as many beneath, which are call'd the Cutting Teeth, or *Shears*; to these are join'd Two in each Jaw, call'd *Canini Dentes*, or *Dogs Teeth*, because they are sharper and stronger than the rest; and these, as the other four Teeth, have but one Root, but much longer and deeper.

These are number'd among the Bones, being of a very hard Substance, fed by little Nerves or Mandibles issuing out of the little Pipes of Mar-

row that run circular about every Jaw; and the Affection of these Nerves by cold or hot Rheums cause the Pain usually call'd the *Tooth-ach*.

8. Of the Eyes.

Q. What is the Office of the Eyes, and the Nature of them?

A. The Eyes are the Instruments of the Faculty of Seeing, brought thither by the visive Spirit of the Optick Nerves.

The Eyes are of a soft substance, of a large quantity, being bigger or lesser according to the quantity of the Body. They are seated in the Head that they might overlook the rest of the Body.

They are compos'd of six Muscles, five Coats, three Humours, and a most bright Spirit, (of which there is a perpetual flux from the Brain) two Nerves, a double Vein, and one Artery, besides much Fat; and lastly, a Glandule seated at the greater Angle thereof, upon that large Hole which on both sides goes to the Nose, and that left the Humour, falling from the Brain, should flow by the Nose into the Eyes, as we see by those that have continual watery Eyes by the eating away of this Glandule.

The Eyes have a Pyramidical Figure, whose Basis is without, but the Bone or Point within, at the Optick Nerve: And that they may be quick in Motion, besides the slippery Fat, Nature has placed Glandules flowing with a certain moisture near those Parts, which have perpetual Agitation.

Q. Why have the Eyes Lids and Brows? Their Composition and Use.

A. The Eyelids are on each side two, being as it were Shutters made and appointed by Nature

to close and open the Eyes when need requires, and to contain them in their Orbs.

Their Composure is of a Muscular Skin, a Gristle, and Hair set like a Pale or Fence at the sides of them, to preserve the Eyes when they are open, chiefly against the Injuries of small Bodies, as Motes, Dust, and the like, which otherwise would be offensive; and these Hairs are ever of an equal length and bigness, implanted at the edge of the gristly part, that they may stand streight and even out: And these Gristles are placed there, that when any part thereof should be drawn upwards or downwards by the force of the broad Muscle, or two proper Muscles, it might follow entirely by reason of its hardness. The upper and lower Eyelids differ in nothing, but that the upper hath a more manifest motion, and the lower a more obscure; for otherwise Nature would in vain have encompass'd it with a Muscular Substance.

As for the Eyebrows, they are placed by Nature like Arches or Bends of Hair, upon the upper part of the Orb of the Eye, from the greater to the lesser corner thereof, as an Ornament to the Face, and also to defend the Eyes against the Acrimony of the Sweat falling from the Forehead.

9. Of the Nose.

Q. What think you of the Nose, its Place and Use?

A. The Nose is placed, first, as an Ornament to the Face; secondly, to convey to the Smelling Faculty; and thirdly, it serves as a Sink to purge the Brain of its gross Superfluities, and is of divers Substances by Composition, as Skin, Muscles, Bones, Gristles, Membranes, or Coat - Nerves, Veins, and Arteries.

The Gristles of the Nose are six in number ; the first is double, separating both the Nostrils in the top of the Nose, extended even to the Bone *Ethmoides* ; the second lies under the former ; the third and fourth are continued to the two outward Bones of the Nose ; the fifth and sixth being very slender, and descending on both sides the Nose, make the Wings or movable Parts thereof. Therefore the Use of the Gristle is, that the Nose being moveable about the end thereof, it should be less obnoxious to external Injuries, as Fractures and Bruises, and besides, more fit to draw in the Air, and expel it forth in breathing ; and for this purpose Nature hath bestow'd four Muscles upon the Nose, on each side two, one within, and the other without.

The external takes its original from the Cheek, which descending obliquely from thence, and after some sort annex'd to that which opens the upper Lip, is terminated in the Wings of the Nose, which it dilates.

10. *Of the Ears.*

Q. Of what are the Ears compos'd ? And how do they hear ?

A. They are compos'd of Skin, a little Flesh, a Gristle, Veins, Arteries, and Nerves, so that they may be bent or folded in without hurt, having each of 'em a Lapper or Tip more soft and pliable than the other parts, and are fram'd into two twining Passages, the better to receive or gather the Air or Sounds that are to be convey'd by them to the Faculty of Hearing.

Within there is a Membrane indifferently hard, as grown up from the Nerves of the fifth Conjugation, which they call the Auditory ; but they

were

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were made into crooked windings, lest the Sounds rushing in too violently, should hurt the Sense of Hearing, and also to hinder any Insect from creeping in.

By the Ears the Brain is purg'd of its cholerick Humours or Excrements, the Ear-wax also conducting to the auditory Passages, being fram'd into these Meanders.

The Membrane mention'd is stretch'd in the inside over the auditory Passage like the Head of a Drum, and thence call'd the *Drum of the Ear*, being stretch'd or extended with the Air or auditory Spirit implanted there, and shut up in the cavity of the Mamillary Process or *Foramen Cecum*, that (beat on by the touch of the external Air entering) it may receive the Object that is the Sound, which is nothing else but a certain quantity rising from the Air beat by the collusion or conflict of one or more Bodies, and so the Hearing is made.

11. Of the Tongue.

Q. Of what nature is the Tongue in Substance, Figure, Composure? And what other things are incident to it?

A. This useful Member is of a fleshy, rare, and soft Substance, the Flesh being of a different kind from the rest of the Flesh.

The Figure of it is triangular, which is rather exprest in the Basis (at the Root of the Bone *Hyoïdes*) than in its Point or Fore-part, where from a Triangle it becomes more dilated.

It is compos'd of a Membrane, (which it hath from that which lines all the inside of the Mouth) four Muscles, two Nerves on each side, the one whereof is sent from the third Conjugation into the Coat of the Tongue; the other, from the seventh,

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venth, is sent into the Muscular Substance, even to the end thereof, which gives it the Motion : And the Sensitive Nerves, from the third Conjugation, are those that give the Sense of distinguishing Tastes of things, compose the Coat, and touch or enter not the Flesh.

Besides these, it is compos'd of Veins and Arteries, on each side one, which it receives from the external Jugular, the Carotid Artery running to the end thereof on the lower side. The Muscles are ten, on each side five, by whose aid it has its fluent Motion every way.

It is made fungous or spongy, that by reason of the rarity of it, it might more easily admit the Tastes conjoin'd with the Spittle as a Vehicle. The second Action of it is, to distinguish the Voice by an articulate Speech. The third is, to help to take in, chew, and swallow the Sustenance.

To keep the Tongue moist, Nature has placed spongy Glandules at the Root of it, on each side one, which suck and receive Moisture from the Brain and other Parts ; and these Glandules are call'd *Tonsilla*, or *Almonds of the Throat*.

12. *Of the Mouth.*

Q. What is to be consider'd of the Mouth ? Its Use, &c.

A. The Mouth is that Capacity bounded with the Cheeks and Lips, containing the Teeth and Tongue, (of which we have spoken) and the beginning of the Throat and Gullet.

The Palate, or *Roof of the Mouth*, is the upper part of it, bounded with the Teeth, Gums, and upper Jaw, in which place the Coat common to the whole Mouth is made rough, with divers Wrinkles, that the Meat put up and down between the

the Tongue and the Palate might be broken and chew'd more easily by that inequality and roughness: And lower in it there are two holes that are open, holding Communication with the Nostrils, that we may breathe more easily when we sleep or wake, and that the Excrements that seek their passage by the Nose may the easier be drawn away by the Mouth.

This Coat is woven into Nervous Fibres, that (like the Tongue) it may judge of Tastes, and these Fibres compose a Coat that hath a middle consistence between soft and hard; for if it should have been harder, like a Bone or Gristle, it would have been without Sense; and if softer, sharp things would have hurt it.

At the further end of the Palate (where the two Holes come from the Nose, above the Entrance of the Throat) are two spongy and fleshy Bodies, of the shape of a Pine-apple. These Bodies are placed to break the Air drawn in by the violence of Breathing, and that by delay it might in some sort temper and mitigate the warmth of the Mouth, and by a *Plectrum* or *Quill* of the Voice, to diffuse the fuliginous Vapours sent forth in Breathing, that it may be dispers'd over all the Mouth, and so resounding from thence, it may be articulate, and by the Motion of the Tongue distinguish and form the Voice into distinct Words or Sounds, as those that have this hurt by any Accident cannot do, but snuffle thro' the Nose, and make a kind of indirect Sound of Words, sometimes hardly intelligible; as we find such do as have it eaten away by Cancers or the Pox.

13. *Of the Throat, Neck, and Parts thereof.*

Q. *What do you understand by that we call the Larynx or Throat? Its Office, &c.*

A. No more in this place than the Head of the Extremity of the rough Artery or Weazon, which comes nearer to the Gristly than any other. Its Dimension is sufficiently large; the Composure consists of eighteen Muscles, equally divided on each side, the which as they are divided in quantity, so also in strength and action, of three Gristles, Veins, Arteries, and Nerves. It has also a double Coat, the one external, and the other internal. And these Gristles, aptly fitted among themselves, utter a distinct Voice by the Benefit of *Epiglottis* or After-Tongue, as also the Muscles opening and shutting, compressing and dilating them, from whence proceed infinite Variety of Voices; for thus: When they are open and dilated, they yield a heavy and dull Sound; when they are shut together, a quick and sharp Sound; and so of others, as being the breathing place of the Lungs.

There are likewise two small Cavities (or rather Fissures) which Nature hath made in the very Throat, under the *Epiglottis*, on each side one, that if by chance any of the Meat or Drink should fall or slip aside in the *Larynx*, it might be there stay'd and retain'd; besides that, the Air too violently entering, might be in a manner broken by those Cliffs or Chinks.

As for the Neck or Throat, it contains the Gullet that conveys the Food to the Stomach; but as for the Neck, properly speaking of it self, it is nothing else but a Part of the Head which is contain'd between the Nawl-bone and the first Ver-

40 *tebra* of the *Back-bone*; and first in the Neck the *Vertebra's* must be consider'd: The Neck consists of seven *Vertebra's* or *Back-bones*, with holes or passages thro' which the Nerves and Marrow pass to other Parts, and these Bones shut into each other like Hinges, that the Neck may easily move the Head as Inclination leads, each being join'd with the other above and below by Nerves and Gristles in an excellent Order.

14. *Of the Arms.*

Q. What is to be consider'd of the Arms, and their Motion?

A. The Arms is supported by, or properly compos'd of Skin, Flesh, Veins, Muscles, Nerves, Sinews, Bones, and Arteries, that it may move nimbly (by the help of its Joints) to perform any Labour or other Exercise, being fix'd to the Collar and Shoulder-bone. The Bone of the Arm is the greatest belonging to the Body, except that of the Thigh, being round and fill'd with Marrow, with a great Appendix or Head on the top thereof, having an indifferent Neck, by which it is knit to the *Symphosis*; for Appendices are no otherwise united to their Bones.

In the lower part thereof it hath two Processes or Protuberances, one on the fore, and the other on the hinder side, between which Swellings there is a Cavity ends in two Holes, of which one is the fore or internal. These Cavities receive the Head of the Cubit; that is, the fore or internal receives the fore Process when the Arm is bended inward, but the external or hinder as it is extended; and thus it receives its Motion.

15. *Of the Hand.*

Q. What of the Hand, and its useful Motion?

A. The

A. The Hand generally signifies all that which is contain'd from the joining of the Arm to the Shoulder-blade, even to the ends of the Fingers; but in particular it signifies only that which is usually comprehended from the furthest Bone of the Cubit, or the beginning of the Wrist, to every Finger's end.

It is the fit Instrument to take up and hold things, compos'd of three great Parts, that is, the Arm, Cubit, and Gland: But more properly the Hand is again divided into three other Parts, viz. the Wrist the After-Wrist, and the Fingers; and these are compos'd of Skin, fleshy Particles, Veins, Arteries, Nerves, Muscles, or Flesh-coats, both common and proper, Bones, Gristles, and Ligaments.

The Hand (properly so call'd) is divided into five Fingers, that it may be the better capable to take up and hold Bodies of all Figures, as round, triangular, square, and the like, and gather up the least Bodies with the Fingers ends, as Needles, Pins, and such-like.

Nature hath bestow'd two Hands upon us, so that they may help each other, and each moving to each side; and she hath arm'd the Fingers with Nails, to preserve them from Injuries in their tenderest Parts, and help them to take up the smallest Bodies; the Nails being likewise a stay to the soft Flesh of the Fingers, which otherwise should turn away in roughly touching or handling hard Bodies.

The length of the Fingers is unequal, so that when they are open'd and stretch'd forth, they make as it were a circular Figure; for so it comes to pass that the Hand can hold all Bodies, but especially round.

16. Of the Thigh.

Q. What is to be consider'd of the Thigh, in its Parts ? &c.

A. The proper Parts of the Thigh are the Muscles, Bones, and Ligaments. These Bones are the Supporters of the Superstructure of the Body, they are knit in the upper part of the *Os Sacrum*, or the Holy bone, and are two in number, on each side one, commonly call'd *Ossa Ilium* ; each of these is compos'd of three Bones, of which one is the upper another the lower, and the third the middle.

The upper is call'd the *Haunch-bone*, and is the largest and biggest, having a gristly Appendix in the compass of it, even to the Connexion it hath with the other neighbouring Bones, whose upper-part we term the right Line thereof ; but the Basis, which is join'd to it by Symphosis, is call'd the Lip or Brow thereof, because it standeth somewhat out and in, after the manner of the Brow : But that which lyeth between the Basis and the streight Line, is call'd the Rib. The upper-Bone hath two hollow Superficies, one Internal, and the other External ; and the Connexion thereof by Symphosis is twofold, the one with the upper-part of the Holy Bone, and the other with that we call the middle, and after some sort the Posterior, taking its beginning from the narrow-part of the *Os Ilium*, maketh that Cavity into which the head of the Thigh is receiv'd.

The Thigh-bone, of all the Bones in the Body, is chiefly round, as likewise the biggest, and so bended, that it is gibbous on the exterior Part, that so it might be safer from External Injuries.

17. Of the Leg or Shank.

Q. What of the Leg or Shank ? Its Motion,

A. All the Motions of the Leg are perform'd by eleven Muscles, six on the fore-side, and five on the hinder, of which some move the Leg only, as they take their Original from the Thigh, others move the Leg and Thigh together, as those that proceed from above the Thigh, *viz.* the Haunch, Huckle-bone, and Share-bone.

As for the Bones: The Whirl-bone of the Knee is gristly and round in compass, but in the inward and middle Part gibbous, but somewhat flat on the side, that so it may be more aptly apply'd to the Joint of the Knee, and fitted within the interior Cavity of the two Appendices of the Thigh, and are the upper and foremost of the Leg.

The Use of it is to strengthen the Joint of the Knee, and to hold the Leg at his due extent, so that it may not be bended so far forward as it is backward.

As for the other proper Bones of the Leg, they are two, the Leg-bone, and one lesser, call'd the Shin-bone. The thicker being hollow and marrowy, is seated on the inner part of the Leg, having two Processes, one bigger, and the other lesser. The Leg in all Parts is furnish'd with strong Ligaments and Muscles; to support and move it, as being that which carries about the whole Frame of the Body.

18. *Of the Feet, their Bones and Motion.*

Q. What of the Feet, and their Parts?

A. The Feet are compos'd of many Bones, one Foot having twenty-six Bones in it, great and small, distributed into three Ranks, that is, the Bones of the Instep or *Tarsus*, are seven; those of the *Pedum*, the After-Wrist, or the back of the Foot five; and those of the Toes fourteen: And

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in the Instep, besides these, there are seven Bones, and these (together with the Nerves, Sinews, Arteries, Veins, Skin, Flesh, and muscular Substances) compose the Foot, the Toes answering to the Fingers of the Hand, tho' not in length or exactness, and help to support the Motion, &c.

Probl. XI. *A Description of the Privy or Genital Parts in Men exactly Anatomiz'd.*

1. *Of the Spermatick Vessels.*

Q. *What are the Spermatick Vessels that conduce to Generation? And how do they perform their Office?*

A. These are longer in Men than in Women, because Men have their Testicles hanging without their Bellies, and Women have 'em lying hid within their Bellies.

As for these Vessels, they are a Composition of Veins and Arteries (as we term 'em) very small, and turn'd with crooked and intricate Windings, even to the Testicles or Stones, that the Spermatick Matter in that Tract (which is yet no other than Blood) may be prepar'd by Heat, and turn'd into Seed in those Vessels, by the eradication of the Faculty of the Testicles.

These Vessels are six in number, four to prepare, and two to cast out the Seed into the Womb.

2. *Of the Testicles or Stones.*

Q. *Of what Nature are the Testicles? And how do they do their Office in contracting the Seed?*

A. They are of a white, glandulous, and soft Substance, that they may the more easily receive the Spermatick Matter: Their Magnitude and Figure resembles a small Puller's Egg, in some

Men

Men bigger, in others less, and have a visible increase and decrease with the Moon, tho' not to any great degree. The left Stone is usually bigger than the right; and where 'tis so, those Men generally get Female Children.

Their Composure is of Veins, Arteries, Coats, and their proper Flesh. They are wrapt in four Coats, two whereof are proper, and two common: The common are the *Scrotum*, or the Skin of the Cods, proceeding from the true Skin; and the fleshy Coar, which proceeds from the fleshy Panicle in that Place, receives a great number of Vessels. And the Office of these Stones or Testicles, is to draw down the Seed, and rarify it; for which purpose they are perpetually in motion more or less.

Q. Have all Men naturally two Stones?

A. Nature so design'd it in all, as the proper number, but by some Defect or Accident in her Operation, some few have but one, but then it is usually bigger than ordinary; others have three but then they are lesser.

Q. Can such Men get Children?

A. Yes; for the heat and working of the Vessels to procure and eject Seed, are the same in a great measure.

3. Of the Yard.

Q. How do you describe the Penis or Yard of a Man? and, To what Use is it design'd?

A. The Yard is of a Ligamentous Substance, because it hath its Origin from the Bones: It is of an indifferent Magnitude in all its Dimensions, yet thicker and longer in some than in others, tho' with all sizes (if perfectly form'd) Children may be procreated.

It hath its Coat both from the true Skin and the fleshy Panicle, but the Veins and Arteries from those of the lower part of the lower Belly, which run on the lower part of the Holy Bone into the Yard, as the Seminary Vessels run to the upper part.

It has four Muscles, which in the Act of Generation open and dilate the common passage of the Urine and Seed, that so the Seed may be forcibly ejected and cast into the Womb, or Field of Nature: They likewise in the Act keep the Yard so stiff, that it cannot bend to either side. It is erected by the heat of the Spirits flowing to it from the Spermatick Vessels, being in itself of a cold and dry Nature.

The Head of the Yard begins where the Tendons end, and (from the figure of it) is call'd the *Nut* of the Yard; and the Skin that covers the Head, the *Fore-skin*. The Flesh of it is of a middle nature between the grand Flesh and the true Skin: But however, the Ligaments of the Yard are spongy, contrary to the condition of others, and fill'd with a gross and black Blood; but all these, stirr'd up with the Delight of the desired Pleasure, and animated by a Venereal heat, swell up and erect the Yard to perform the Act.

Probl. XII. *A Description of a Woman's Genital Parts, or Parts of Generation, &c.*

I. *Of a Woman's Secret Parts.*

IN what differs a Woman from a Man in the Parts of Generation, seeing in almost all other Members there is a likeness, both External and Internal?

A. She

A. She was made in those Parts different for the sake of Generation, that Man might propagate in Kind; wherefore, as the Man has expulsive Vessels, the Woman has receiving ones, to retain, cherish, and enliven the Seed.

Q. *How are the Parts of this kind describ'd?*

A. The *Vulva* placed at the bottom of the Bell is accommodated with two Lips, of a Coral Red for the most part, which upon occasion open like folding Doors: Then in Virgins, a little within the Orifice, are two things spreading like Wings or Herrings Gills, closing over to secure the Passage; and when these are open'd, in Copulation or otherwise, there are beyond 'em four little fleshy *Caruncula's* or Knobs, standing close together, to guard the Neck or first entrance of the Womb, like Myrtleberries, which being forc'd in coition, and broken, bleed, and give way for free passage into the Field of Generation: This is call'd a *Maidenhead*, or the *Virginity*.

Q. *Why have Women Hair on their Privy Parts and not on their Faces or Breasts; unless some Old Women?*

A. Because that Part is furnish'd with a greater heat than the Face, which makes Hair grow, to cover and keep that part warm, and likewise to keep it from fretting and chafing in the Act of Generation.

Q. *When does it begin to grow with Maidens?*

A. In some at Twelve, in most at Thirteen, but in those that are of a cold Constitution, not till Eighteen or Twenty Years: So that this shews their Ripeness, and their Desire of being join'd to a Man. In Men it comes not till Fifteen or Sixteen; in some not till Eighteen or Twenty.

when the Tone of their Voices begin to change.

Q. How are the Spermatick Vessels of a Woman describ'd?

A. The Spermatick Vessels in a Woman differ in nothing from those of a Man, neither in Substance, Figure, Composure, Number, Connexion, Temper, Original, and Use, but only in Magnitude and Distribution; for in Women they are more large and short than in Men.

Q. And for what Reason are they contriv'd so very large?

A. Because they should not only convey the Matter fit for generating of Young, and nourishing the Testicles, but also a Sufficiency for the nourishment of the Womb and the Child. They are short, because they end at the Testicle and Womb within the Belly in Women: And the preparing spermatick Vessels, a little before they come to the Testicles, are divided into two unequal Branches, of which the lesser bendeth after the same manner as that of Men, and goes into the Head of the Testicle, thro' which it sends a slender Branch (even thro' the Coats of the Testicles) for Life and Nourishment; and not only into the Coats, but also into the leading Vessels. But the bigger Branch descends on each side by the upper part of the Womb, between the proper Coat and the common, from the *Peritonæum*, whence it is divided into divers Branches. And by this Difference of the Spermatick Vessels it may be easily gather'd, that the Woman casts forth less Seed than the Man.

Q. In what do their Testicles differ from those of Men?

A. They

A. They differ little from Mens, but in quantity; for they are less in Figure, and more hollow and flat, thro' defect of Heat, which would elevate or lift 'em up in their magnitude. Their Composure is more simple, for they want the *Scrotum* or Cod which Men have, and they lie hid in the Woman's Belly, near the bottom, at the sides of the Womb, but so as they touch not the Body of it; and they are colder of Temper than Man's.

Q. How differ the ejaculatory or leading Vessels?

A. They differ from Mens inasmuch as they are large at the beginning, and of a Veiny consistence or substance, so that you can scarce discern them from the Coat *Peritonaeum*; then presently they become nervous, and grow so slender, that they seem broken or torn, tho' they are not so; but when they approach the Horns of the Womb they are again dilated in their own Conditions, and agree with Mens, only they are altogether more slender and short. They have a round Figure, but with more intricate windings than a Man's, which in ejecting of Seed gives the Woman the greater Pleasure.

Probl. XIII. *Of the Defects in the Genital Parts of Men, the Causes, &c.*

Q. WHY is there a Deficiency of Seed in some Men?

A. The Cause relates either to the Matter it self, or to the Testicles, in which it is prepar'd.

As touching the former, naturally it is the Chyle, or mucilaginous, fat, milky part of the Blood, as appears by its Consistence, Colour, &c.

Now, whatever impairs this, must consequently cause a deficiency of Seed; such as Hunger, the Disorders of digestive Faculty, excessive Evacuations, Watchings, violent Passions of the Mind, immoderate Exercise, and suchlike, rarefying and sharpening the *Blood* beyond its due temper, and so exhaust the Chyle or Seminal Matter.

Q. Why are fat and corpulent Persons liable to this Inconvenience?

A. Because the milky part of their *Blood*, which should be dispos'd on for Seminal use, is diverted and anticipated by its being converted into Fat.

Q. What is the Cause of the irregular Ejection of the Seed?

A. The Ejection of the Genital Liquor is irregular, first, when it is cast forth without any Venereal Provocation: Secondly, When in the Act of Venery its Egress is precipitant and hasty: Thirdly, When 'tis very slow; and, Fourthly, When 'tis not ejected at all.

Q. What hinders the Ejection of Seed in some Persons?

A. A fleshy Excrescence in the Yard, stopping the passage: It proceeds often from some virulent Clap, by which the *Urethra* is corroded, and the Nourishment naturally repairing to the corroded Part, settles into a fleshy and Wart-like Substance, so that sometimes, instead of Seed, Blood is voided, sometimes Wind.

Of Disorders relating to the Erection of the Yard.

Q. Why is it said there is a Disorder in the Erection of the Yard?

A. In this Case we must distinguish the Turgescence and Distention of the Yard from a due E.

Erection; the former proceeds from the Influx of the Arterial *Blood* unto the two Nervous Bodies, but this distention is continued and wrought into a state of Rigidity and Erection by the Contraction of the two pair of Muscles seated at the Root of the Yard, which compresses the Vein that runs along the Back, and so hinders the reflux of the *Blood*; and when their contraction ceases, the *Blood* that distended the Yard is discharg'd by this Vein, and leaves it in a drooping condition: So this contraction of the Muscles is the Cause of the Erection, and is in a great measure promoted by the spirituous quality of the Seed in the Seminal Vessels.

As for the Impotency and Defect of Erection, it proceeds either from the Relaxation of the two pair of Muscles, and the Inactivity of the Spirits, or the Fatness of the Seminal Liquor: And these Muscles may be relax'd by a Palsie, excessive Riding, a Fall, or violent Blow upon the Sacred Bone, a Wound of the Head afflicting the respective Nerves, Mercurial Injections, with extream Colds, &c.

Q. What causes the immoderate Erection of the Yard?

A. This proceeds from the Contraction of the Muscles at the Root of the Yard, hindering the Recess of the *Blood*, which may two ways be caused:

First, When the Redundancy and Turgescence of the Seminal Liquor irritates to a perpetual Erection and Venereal Desire, which for the most part ceases after repeated enjoyment.

Secondly, When the Muscles are seiz'd with Convulsions, and the Erection is attended with

Pain

Pain, exasperated with Venereal Embraces, the Person being free from any Inclination that way.

Of the Depravation of the Erection of the Yard.

Q. *How comes the Depravation of Erection?*

A. It is depraved when it stands awry, or out of the natural posture; if the Bridle be short, it stands bent, but that may be remedied by cutting the Bridle.

If the Depravation proceeds from any Inflammations, it may be remedied by emollient Cataplasms.

Q. *Is there no other Cause?*

A. Yes, when the Prepuce or Fore-skin imprisons or streightens the Nut, and cannot be drawn back; and this is call'd *Phymosis*: Or when the Prepuce is drawn off, it cannot conveniently be brought again to cover the Nut; and this may be help'd by *Incision* or *Emollients*, especially when 'tis occasion'd (as for the most part it is) by the first Venereal Encounter, and then it is usually attended with a Swelling, which causes a soreness that incommodes the Party, and renders him unactive in the pleasing Recreation of Love.

Probl. XIV. *Of the Defects in the Genital Parts of Women; and how to make an Artificial Maidenhead, &c.*

Q. *HOW is the Depravation of the Venereal Appetite caus'd in Women?*

A. This Appetite or Lust is no other than a tickling of the *Clitoris*, caus'd by the Influence of Seminal Matter abounding in the two glandulous Prominences, and other Glandules of the *Vagina*.

This

This, according to Nature, ought to be moderate, notwithstanding it is sometimes deficient, and sometimes exceeds.

The Languishing of the Venereal Appetite is oft occasion'd by the scarcity of Genital Liquor and its want of Spirits. It proceeds sometimes from other Diseases, as, the Scurvy, Dropsy, &c. but if this Appetite is altogether wanting, the fault is in the Structure of the Parts, and admits of no Cure.

To make an Artificial Maidenhead.

Q. How may it be possible to recover a lost Virginity, or make one pass for a Maid that has known Man?

A. The Virginity once lost, can never be said properly to be restor'd, yet an artificial one aping the true one may be obtain'd, and pass muster very well, by strengthening the Genitals, and retrieving the Tone, which must be effected by Baths and Fomentations prepar'd of Astringents, such as the Root of the greater Comfrey, Plantane, Ladies Mantle, Rob of Asaccia, and Allom; and these decocted in fair Water, may be apply'd with a Sponge, or injected by a Syringe.

That which provokes Virgins to forfeit their Angelical Title, is Lust, which they begin to entertain about Fourteen, some earlier, when the menstruous Flux commences, then are they ripe.

Q. What is the Occasion of this Flux, commonly call'd Menfes Profluvium?

A. 'Tis the evacuation of Blood by the Secret Parts, beginning at their Fourteenth Year, and ending at the Forty-ninth, tho' some retain them much longer. This returns duly once a Month, in some a few days earlier, in others later, as their Constitution is more or less dry or moist, sympathizing

thizing in this with the Course of the Moon; and therefore the Ancients us'd to paint two yoked Women drawing the Chariot of that Planet, to signifie what influence and dominion she had over them, as well as other phlegmatick and watery Bodies. But in time of Childbearing, and sometimes when they give suck, they are not so subject to it, because the *Menstruum* is drawn quite another way.

The Cause yet more immediately is, the extraordinary Fermentation and Rarefaction of the mass of *Blood*, occasion'd by a peculiar fermentative power of the Glandules of the Womb, whence (being incapable to be contain'd within its ordinary Bounds) it forces a passage at the Arteries of *Vagina*. And the quantity being thus lessen'd for the space of three or four Days, the Fermentation ceases till the next Period.

Of the Deficiency of Womens Terms.

Q. What causes the Deficiency of the Terms, or total Suppression of 'em, especially for a time?

A. This is occasion'd either by a Defect in the *Blood*, or in the *Womb*, or the Vessels thro' which it flows. The fault of the *Blood* is, its grossness and toughness, and fixt acidity, proceeding from the disorder of the Stomach, whereby it becomes unapt for the due fermentative Expansion.

Sometimes the Vessels of the *Vagina* are obstructed by a viscid Phlegm, and sometimes the sides of it being ulcerated, or otherways hurt, grow together; in which Case the wonted Flux is deficient.

Q. Why have some Women, at least at certain times, immoderate Fluxes?

A. This is so call'd when the Courses flow of.

oftener, or in greater quantities than they ought naturally to do. The chief Cause of this is in the *Blood*, either when 'tis too waterish, or when its *Serum* aboundeth too much with a fatish Acidity or Acrimony ; or else when 'tis extreamly heated with Venereal Rage, Exercise, Joy, Anger, hard Drinking, Aromaticks, or hot Weather.

Q. Is this dangerous to Health?

A. It is, if of any continuance ; for it often causes Weakness, Indigestion, Cachexy, swelling of the Feet, Dropsy, and the Whites ; and if the Party be much in Years, 'tis difficult to cure.

Probl. XV. *Of the Embraces of Men and Women in the Act of Generation, usually call'd Carnal Copulation, &c.*

Q. WHY is Carnal Copulation so desirable, seeing it is an Act that often makes Men and Women bluss at the naming, and that in it self it is but a beastly Act?

A. It was design'd for the propagation of Kind and Likeness, to procreate the like Species, that the World might encrease and be continued with all Creatures to the end of it ; wherefore Nature hath implanted strong Desires, prompted and kindled by the Fire of Love, and apt Vessels to give and receive mutual Solaces ; and the Seed, during the act of Embracing, pressing thro' the small winding Tunics of these Vessels, cause a certain Pleasure that affects all Parts.

Q. Is it healthful to the Body, or not?

A. 'Tis very healthful, if used moderately, because it carries off that Superfluity which (thro' a long continuance) would corrupt and turn to evil

Hu

humors, cause Tremblings of the Heart, Swooning and Fainting, and likewise discolour the Skin, as we see in ripe Virgins and young Widows, but us'd to excess, (as all other things) is very pernicious, because so great a waste of the purest Blood (mix'd with the vital Spirits) decays Nature, drying up the Marrow which it should feed and cherish, making People appear old and shrivel'd even in Youth, and, without doubt, shorten their Days.

Q. How comes it to be more and better allow'd to me than to others, as less hurtful?

A. This must be regulated by the Constitution and Complexion of the Party; for if Melancholy and Choler abound in the Parties, they are of a dry Constitution, and so much Radical Moisture as goes to make the pure Blood, which is concocted into Seed, must needs waste their Strength much, and dry 'em up; whereas the sanguine and phlegmatick Persons, abounding with Blood and Moisture, are better able to bear it, as having a Supply to recruit it, being of a softer Temper, and more inclinable to Love.

Q. Why have not some married People Children, if they are strong and healthy?

A. Because they are of different Constitutions, and their Nature is disagreeable. If the Man be cold in the third degree, and the Woman so in the second, the cold Moisture will not permit the Seed to be cherish'd in the Womb, but it will either fall out, or putrifie therein, dispersing into humours, and spreading it self by sweating out quite through the Parts adjacent. Again; if a Woman be of a very hot Constitution, tho' the Man be never so agreeable and temperate, that Heat

Heat in the Womb will consume the Seed, so that it will not come to any thing. Too great Heat, or overmuch Cold, is the Cause of all Barrenness.

Q. Why have some People no Children for Nine, Ten, or more Years after Marriage, and then often have 'em every Year?

A. Their Constitutions, tho' disagreeable at first, by continuance of Time, the working of Nature, and proper Diets, or use of Physick, alter and become agreeable, so that the Seed on both parts grows temperate, and apt to receive the nourishment of the Womb to enliven it. And so we often see, if one of these Parties die, and the other marries again to a more agreeable Constitution, Children will be begot without difficulty.

Q. Why are Children begot by Old Men usually wither'd or hollow-ey'd from their Infancy?

A. Because thro' Age and Frigidity the Seed not having sufficient heat well to concoct it, grows thin and weak, and therefore cannot give a Vivacity to the Child, which in all things participates of the Seed; as we find Pocky and other diseased People entail Misery upon their Children, those Diseases running in their Blood, and which they bring into the World with 'em, thro' their Parents being afflicted with Breakings-out, Pains, Aches, and the like.

Q. Why is a Woman more desirous of Carnal Copulation than a Man, tho' she seems to deny it?

A. First, because she is always ready to receive the Man, and the Man not always ready for the Act of Generation. Secondly, The Heat of the Womb prompts her to it, that it may be allay'd by Seminal Injection. And lastly, because she conceives double the Pleasure of the Man.

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Probl. XVI. Of the Mystery of Generation; the Formation of the Embryo in the Womb; how it is sustain'd when there. How to know whether a Woman be with Child, or not; if so, whether it be a Boy or Girl. To prevent immoderate Longing.

Q. What is Generation? or, How is the Embryo form'd in the Womb?

A. After Copulation, when Nature hath taken both Seeds into the Field of Generation, which is the Womb, and retains 'em by the natural heat, a little thin Film or Skin is produc'd, almost like that which is next the Shell of an Egg; then certain Days after, the *Spirits* and *Blood* mingling together, they boil up or ferment in such sort that three little Bladders arise like floating Bubbles, and from these are form'd the Brain, Liver, and Heart, which are the most excellent Work of Nature, and these fasten themselves to the Womb by their heat and prolifick force, in their Order and Time, out of the *menstruous Blood*, from a lump of coagulated Flesh, or a kind of indigested Mass, and form the Members.

Q. By what degrees is the Formation of an Infant? And when does it receive its Soul?

A. For the first six days the Matter is curdled as Milk, the nine days following it is concocting into *Blood*, and in twelve days after it becomes a mass of *Flesh*, and then the Members begin to take form and shape; and at the end of eighteen days more it receives a Soul, and so encreases till the appointed time of Delivery.

Q. How does a Child in the Womb receive its Sustenance?

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A. Sustenance is convey'd to it by the Navel-string, which is fasten'd at one end to the Womb, the other enters into the Child's Belly, and hath communication with the Bowels and Bladder, which nourishes it, together with the Moisture that is drawn in at the Pores.

Q. Does it void any Excrement during its Confinement in the Womb?

A. Only by Urine and Sweat, which falls into a little Membrane or Bladder in the Womb, that receives it separate from the Child; and this is done by the conduct of the Navel: But there is no Purgings by the Fundament, because there's no Sustenance receiv'd at the Mouth; for the little Belly or Stomach does not as yet its Office, and for that reason nothing is emitted into the Bowels. A Child not having the use of its Mouth to sustain it till it comes into the World, draws freer Air: And thus prudently Nature has provided, that neither the Womb of the Mother, nor the Child might any ways be burthen'd or suffocated with Excrements that are in any degree injurious to either of their Healths.

Q. By what is a Woman apt to miscarry?

A. The scent of the Snuff of a Candle, sudden frights, which loosens the Child, and opens the Neck of the Womb; too much Venery, after a Woman's Conception, great Colds, and unwholesome Diet.

Q. How shall a Woman know when she has conceived?

A. The Symptoms are, yawning or stretching, shivering or shaking, at certain times a chilliness between the Shoulders and the Back.

Or, if she often peeks, strains to vomit, spits much,

much, distastes her Food, grows dull and careless, with heaviness of Eyes, a squeamish Stomach, or qualmish Longing after things, sometimes after what is not wholesome; the Belly falling or flattening; and then suddenly rising again and growing big; her Hips and Reins being enlarg'd.

Q. What Signs are to be observ'd from the Urine?

A. Very material ones, viz. if the Urine be white and clear, mingled with little Motes, and at the top a little cloudy Scum appears of various Colours, as of Opal of the Rainbow, and a thick Sediment at the bottom, which spreads like little Flocks of Wool when shaken.

Q. Is not the Motion of the Child the most certain Sign? When, and how is that Motion at first?

A. It is most certainly; and this happens in the third or fourth Month, being at first very gentle, and like the stirring of a Fly when it flies.

Q. Many times Women bear Twins, what Signs are there to know if One or Two Children are in the Womb?

A. There are many, but not distinguishable till the third or fourth Month, and of those the chief are as follows, viz.

(1.) The greatness of the Belly.

(2.) A strong and forcible Motion on the Right Side, and on the Left at the same instant.

(3.) If the Sides be higher than the Middle of the Belly, and from the Navel downward there appears a Seam or Line of Separation between both Sides erected.

(4.) If the Woman cannot bear her Burthen but with much difficulty, and her Belly falls upon her Thighs and Hips; all these are certain

Signs

Signs of two Children, and sometimes Three, tho' that seems above the Order of Nature, because a Woman has but two Breasts, and Nature usually provides for whatever she produces.

Q. What are the Signs of a Male, and what of a Female Child in the Womb?

A. To satisfy the longing Desires of some Women in this Point, we answer,

1. If a Boy, the Complexion of the Woman will be more fair and lively than if it had been a Girl.

2. Her Right Breast will be harder and firmer, the Nipple more obvious, the Milk whiter and thicker, and will stick in round Pearls or Bubbles if spirted out of her Breast on Crystal, or on a Looking-glass: If cast into Water, it will not mingle with it, but sink directly to the bottom: If a Cake be made with her Milk and fine Flour, it will be very firm and close.

3. Her Belly will have a bigger rising on the Right side than on the Left, be more copped, and the Child's Motion sooner, with greater heat than is usual in the bearing of Females.

Q. Why do Women long when with Child, and often for things that are not Food?

A. The Causes of Longing are various, tho' (as to the main) they centre in one, viz. That when a Woman is with Child, the Tunics and Orifice of the Stomach are often infested or pestered with divers Excrements or Juices, and the Woman longeth according to the quality of these ill Humours.

If they proceed from Melancholy, not adust or burnt, then the Woman will frequently cover herself with sowre things, as Lemons, Oranges, Vinegar, &c. Juice, and the like.

If the Humour be adust or burnt *Melancholy*, then she will long for things unnatural, that are not Food, as Loam, Coals, Plaister, Ashes, Tobacco-pipes, &c.

If the Humour be salt, then she requires salt things, and so of other Humours to suitable things, as the Appetite is more or less deprav'd.

Q. How may this be avoided, or what Remedies are there for it, seeing it is so often hurtful to the Female Sex?

A. The Remedy (where it is not possible to be avoided, as at all times it cannot) is to eat such nourishment as breeds good Juice, which will at least lessen it, and that in a moderate quantity to be encreas'd as the Child groweth in the Womb.

Also boil Saffron, Quinces, and a little Oyl of Spikenard added to them, making them into Pulp, and so spreading it upon a piece of Leather lay it to the Pit of the Stomach: Their Meat likewise must be varied as much as is convenient the better to whet the Appetite, and then more pleasing to the Taste.

Q. Why do Women with Child so often Vomit more than at other times?

A. It proceeds from the great quantity of Humours gather'd in the Stomach, or from some cholerick, sharp, and biting Humours that stir and provoke it, and principally the upper Orifice, for reason of the disagreeable Food they eat in too great a quantity, or by overstuffing themselves in Eating, which corrupteth in the Stomach and so causes a nauseating or loathing, which makes a straining to Vomit; and if this be immoderate, there is little danger in it, for the

putrid Meats and bad Humours are better cast forth than retain'd.

Q. How may this be remedied, where it is over-violent and hurtful to Nature?

A. To do this, the Stomach must be cleans'd of its foulness with a Compound of the Syrups of *Cichory* and *Rhubarb*, of each an ounce; after that with a like quantity of the Syrup of *Damask Roses* and a quarter of an ounce of *Manna*, at an Hour after.

Q. How must a Woman order herself who cannot bear her Children the full-time? How happens it? And what are the Signs and Symptoms of it?

A. Some inwardly-lurking Disease, or over-violent Motion and Action in embracing Man, is usually the Cause of this hastening the Birth; or sometimes 'tis in the Child, for want of Nourishment sufficient in the Womb; or thro' Weakness and Sicknes in it; or else by the over-streightness of the Womb, as not able to contain it; and also over-fulness, or much leanness, causes *Abortion*; and such as (during their Childbearing) have their natural Courses, do often miscarry.

As for the Symptoms or Signs, they appear when the Milk flows in the Breasts, running out in a great quantity, leaving the Breasts soft and limber. And if two Children happen to be conceiv'd at once, and one Breast grows empty and lank, and the other remains full and round, she is likely to miscarry of one of the Children, especially if the Nipple be of a bad Colour, for this plainly demonstrates that the Child doth loath its Nourishment, and that the Matrix is likewise distemper'd.

Great Looseness, and Pain in the Back, Thighs,

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and Groin, that come round the bottom of the Belly frequently, are the Forerunners of *Abortion*.

As for the Woman ordering herself to prevent this, if Sickneſs occasion it, ſhe muſt take ſuch things as are ſuitable to the nature of the Diſtemper; and if not, let her ſhun all violent Exercise and too often dalliancing at *Venus's* Sports when ſhe is with Child, for this alone cauſes more *Abortion* than all other Accidents, by preſſing the cloſe foldings of the Neck of the Womb, ſoſtening it, and making it ſlippery, ſo that it eaſily opens; and the Child being looſen'd in the Womb by ſuch extravagant Careſſes, is ſubject to fall out upon any ſtraining, &c.

Now, contrary to theſe, uſe ſoſtening and molliſying Baths made of ſweet Herbs, Sheeps-heads broken to piéces, and ſuch ſuppling Unguents as may enlarge the Belly and Matrix, and feed moderately on wholeſome Diet during the Child-bearing, eating juſt ſo much as may nourish her ſelf and the Child, and when the end of the Nine Months approaches, ſuppling and relaxing Unguents muſt be uſed.

If over-corpulency or fatneſs be the Cauſe, ſhe muſt take Advice about moderate Bleeding and Purging, uſing Meats not too nourishing or ſuperabounding with Juice: But if ſhe be lean, ſhe muſt eat ſuch nourishing Things as will encrease her Fleſh, and drink ſuch Cordials with moderation as may enliven and cheer up her Spirits.

Q. How will you know which Humour of the Body predominates to cauſe Sickneſs, Pains, &c?

A. This is a rare Secret, known but to few Philoſophers or modern Phyſicians, and is to be experienc'd by the *Almageſta*, viz.

Take

Take a pound of Solder, fine Tin half a pound, Mercury eight ounces; melt and mix them as well as may be, then take the *Amalgama* all together, and putting it into an Alembick, from which (upon distillation) four ounces of Water will proceed, then put the Party's Water into a Urinal, and drop of the Distillation one or two Drops into it, and you will immediately see the four Humours of the Body that are in the Water separate, and that which is greatest in quantity is the prevailing Humour.

Probl. XVII. *Of false Conceptions; or, The Mola.*

Q. *Br what Means are Women deceiv'd, supposing themselves with Child when they are not?*

A. This happens often by a false Conception, which is (as 'twere) the beginning of a *Mola*; and some have the *Mola* itself, which by some is call'd *Mooncalf*.

As for this false Conception, it is a lump of Flesh gather'd in the Womb, like the Gizzard of a Fowl, which is bigger or lesser according to the continuance of it, which Nature commonly expelleth in the second, third, or fourth Month: But the *Mola* far exceeds it in bigness, and continues a Year or two; nay, sometimes to the end of Life.

Q. *Are there not more than one kind of these Mola's?*

A. There are two sorts of 'em, the one may be call'd a true, and the other a false one: The true *Mola* is fleshy, being nothing else but an

unprofitable mass, without Shape or Form, bred within the Matrix, and cleaving to the Sides of it.

The false *Mola* is of three sorts, the one windy, being a Collection of gross Vapours.

The second waterish, or an heaping together of Waters.

The third Humoural, or a meeting of many Humours; all Three contain'd within the Capacity of the Womb, which makes 'em differ from the Swelling, Hardness, or Schyrrhus of the Womb, or from any Flesh, Water, or Humour that may cleave to or touch the outward Part thereof: And these are often bred together with the Child, but then they are the chief Cause of its Death.

Q. For what Reason are they the Cause of the Child's Death?

A. Either because the Child is deceiv'd of its Nourishment, which is carried to the *Mola*, or because it takes up so great a part of the Womb, that the Child (wanting room) can't grow to Perfection.

Q. How is the Mola caus'd?

A. Galen is of Opinion, that the fleshy *Mola* does not grow from the Woman alone, but the Seed of the Man bears a part in its Formation, when it is weak, barren, little in quantity, and for the most part choak'd by the abounding of the Menstruous Blood, which being gross and thick, is altogether unfit for the framing a Child; so that instead thereof, it ingenders a Lump of Flesh, which being wrapt in its own Membrane, encreases by little and little. The others are bred (in like manner) of Wind, Water, and Humours.

shut up spongy Membranes, and encreasing in the Womb.

Q. What are the Signs of these false Conceptions?

A. They have some common Signs with the true one, as, Suppression of the Natural Courses, deprav'd Appetite, Distastefulness and Vomiting, Swelling of the Belly and Breasts, so that it is something difficult to distinguish the one from the other; but these that I shall name are more proper to the false than to the true Conceptions.

For, as *Hippocrates* says, in false Conceptions, or the *Mola*, the Face is usually puffed up.

The Breasts that were swoln at the beginning duly fall, become limber, and without Milk, and in the end the Breasts, Thighs, Arms, and Legs, grow lean and thin: True it is, they swell towards Night, like those that have the *Dropsy*, and the Belly riseth and groweth quickly, and withal very hard, for the most part of an equal roundness, with pricking Pains in the bottom of it, that never cease, which makes the Woman cannot walk without Pain and Weariness, as being hinder'd by a heavy Burthen, and having often a Windiness in the Womb.

Q. Why are Women sick more when with Child than at other times?

A. Because they live (as *Aristotle* saith) for the most part in Idleness, and eat ill Meats, which are turn'd into Excrement, and breed many Obstructions, the Fountain and Beginning of all Diseases. And again, the great suppression and stopping of the *Blood*, which us'd to be purg'd once a Month before their being with Child, but now

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this running to the Matrix to be voided, and finding no accustom'd Passage, which 'twas wont to have, and the Child, which is yet but little, not being able to spend or digest it, it returns back into the Veins, and chiefly into those that are near the Stomach, and thro' its long Continuance is corrupted and chang'd to be of a bad quality, whereof proceeds this deprav'd Appetite, which the Latins call *Pica* or *Malacia*, a loathing of Meats, Hiccup, Aches in the Hips, Back, and Groin, difficulty of making Urine, together with panting and beating of the Heart, Abortion, and the like.

Pliny ascribes some Cause of their illness to the growing of the Child's Hair in the Womb; and, that the Woman feels her self worse when the Hair begins to grow, especially about the New Moon.

Q. How is the Hicket or Yexing, so common to Women with Child, caus'd?

A. By reason the Stomach is fill'd and stuffed with divers Excrements, which cloy the big-bellied Woman, which abiding long there, they cause the Hicket or Yexing: And this proceeds from the violent and convulsive motion of the Stomach, that seemingly discharges it self of those bad Humours contain'd in the Membranes thereof, and offend in quantity and quality, or in both together.

Q. What is the Cause of the panting and beating of the Heart, as also of Swooning, happening so frequently to Women with Child?

A. As for the first, 'tis caus'd by Vapours arising from the Womb and other Parts adjacent, which are inclos'd in the Arteries, and by them

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are carried to the Heart, which afflicting the
rall Spirits seated there, cause a trembling and
panting; for the Heart finding it self oppress'd
them, Labours in those Convulsive Motions
cast off and expel 'em.

As for the second, it proceeds from much the
same Effect, tho' the Vapour being stronger, oft
afflicts the Heart and Brain at one and the same
time; and the first is usually the forerunner of the
second: And the Sign of the Syncope or Swoon
ing may be known by the expensive beating of the
Heart, when its motion is so strong that it lifts
up the Ribs, which may be perceiv'd by the
Hands being laid on the Breast or the Region of
the Heart.

*Q. What are the true Signs of a Woman's being
in Labour or Travail?*

A. If the Pains begin at the Back, and run
down all-along the Belly, without staying at the
Navel; and chiefly if they run along the Groin
and end in the bottom of the Belly inwardly
is, in the inward Neck of the Womb, then is
certain Sign that she begins to be in Labour.

*Q. Is there any Advantage to the Child in tying
the Navel-string long or short, to be cut after Deliv-
ery?*

A. There is, for it has communication espe-
cially with the Privy Parts; for if you press your
own, tho' now shrunk in, hard with your little
Finger, so as to hurt it never so little, you will
find a sharp Pain presently in the bottom or root
of your Yard or Fundament: So that most are of
Opinion that it ought to be ty'd long or short,
according to the difference of the Sex, allowing
more measure to the Males than to the Females.

because this length makes their Tongue and Privy Member the longer, whereby they may speak the plainer, and be more serviceable to Ladies when grown up: Also by tying it short, and almost close to the Belly of Females, it causes their Tongue to be less free, and their Privy Parts more streight; so that the Gossips say, if it be a Boy, *Make him good Measure*; but if it be a Girl, *Tye it short*.

Q. What is Hippocrates's Opinion of cutting the Navel-string of some Children, and as to their Living or Dying?

A. That if the Woman be deliver'd with Pain, and that the Child stays long in the Womb, and comes not forth without much Difficulty, such Children are not long-lif'd; and therefore their Navel-string must not be cut before they have sneez'd, piss'd, or cry'd, lest they presently fall into Fits, and die away.

Q. Why cannot some Women be deliver'd, or at least not without great Difficulty, if a Person displeasing to 'em be present?

A. This proceeds from Antipathy arising from some Dislike or Fear, which gives a check to the Spirits, and keeps back the Child: Or else, being ashamed to see herself in that case, when some one or other comes surprizingly in the expected nor, it puts a kind of stop to Nature for the present, as it were a check upon the Mind. And this has often happen'd when there has been any Dislike to the Midwife, or that they have not had the Midwife they are us'd to have.

There are some on the other hand who cannot be deliver'd (at least not without much Danger) unless some certain Person, whether Male or Female,

male, be present, whom they then so passionately desire to see.

Q. How (or by what Signs) may we know whether a Child be dead or alive in the Womb?

A. If there be motion or stirring in the Child, it must of necessity be concluded there is Life, which the Mother may conjecture: As also a skilful Midwife or Chirurgeon, by laying a Hand upon her Belly, and by otherwise feeling whether the Arteries of the Navel-string beat, can easily from thence discern whether there's Life or not. But, on the contrary, if the Woman feels a heaviness, and that in turning herself to the Right or Left, the Child seems to fall like a Lump; if her Belly be cold, and there comes an ill Scent from her, 'tis a Sign the Child is dead.

Q. Why do those of later Times tell us, that Hippocrates was mistaken, when he says a Woman in the Delivery of her first Child has the greatest Pains?

A. It is taken from Experience often, that a Woman in her first Childing hath very few of those Pangs and Gripings which take hold of those that often bear again; and the Reason is, that the Blood, which in Youth is sweet and mild, in time grows bitter, salt, and of an adust quality, which passing thro' the Veins, procures this Pain, as Years grow upon the Woman more and more, to wear and waste her Strength with often Childing.

Q. Seeing Child-bed Women are subject to many Diseases and Accidents, so that some of 'em cannot presently tell what to make on't, what Rule is there to inform them when they are sick, or inclining to

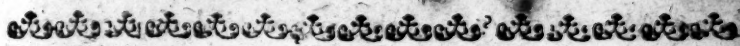
it, or in a promising state of Health (as they call it) like to do well?

A. This is to be known by the quantity of their Purgations. If the *Blood* is red, and well colour'd, passing away, then presently congeals and thickens, 'tis a sign of good Health, and will tolerably continue so all the time of her Lying-in: But when the Purgings come away in small quantities, and of an ill colour, not suddenly congeal'd, 'tis a sign that the Woman is not in a state of Health, but will be uneasie, and very much subjected to one ill Accident or other all her Lying-in.

Q. What is a Natural Birth? and, How does a Child make its way out of the Womb?

A. A Natural Birth is when the Head comes directly on the Neck of the Womb, the Arms close and streight down, the Legs not straddling; and so when the Matrix pain'd will keep it no longer, but strives to bring it forth, it opens so, that the Child feeling the Air, followeth it, and strives more and more to get toward the opening of the Womb, to gain its deliverance.





Probl. XVIII.

The Cause of Monstrous Births in Nature, with some Examples of strange and monstrous Productions.

Q. *How are Monsters generated in the Womb of so many strange Kinds?*

A. It is the Opinion of Aristotle, and other Philosophers, as well as learned Physicians, That if at any time a Creature bearing One at once (as Man) shall cast forth more Seed in Copulation than is necessary to the generating of One Body, it cannot be that only One should be procreated of all that Matter, therefore from thence either Two or more must arise; whereof it cometh to pass that those are rather judg'd Wonders, because they happen seldom, and contrary to the *common Custom* of Nature: But in case of Monstrous Births they happen sometimes by strange Accidents, as the joining Two Bodies together in the Womb by one Part or other; sometimes by the Corruption of the Seed monstrous Shapes are form'd, very terrible and affrighting to the Beholders when they come into the World; and some ascribe this to the bad influence of the Planets that were predominant at the time of the Conception.

Q. *How, or what are the Examples of Births contrary to the ordinary Course of Nature?*

A. In Bavaria a Female Child had two Heads and Necks, and all the rest of the Body fair and proportionable, living to a great age; and when

one Mouth laugh'd, the other did so too, and the Heads in every thing sympathiz'd with each other.

At *Verona* in *Italy* two Female Children were born growing together by the Back.

A Male Infant was born with another growing out at his Navel, all but the Head, Shoulders, and Arms appearing outward; so that growing up to a Man, he carried this about him for many Years.

Some have come forth of the Womb sticking together by the Foreheads, others by the Bellies, some by the Sides, others again by the Breech, some have been seen with four Arms and four Legs, others with another Head appearing at the Belly.

Some have been born without either Arms or Legs; others without Heads, yet have they liv'd for some time, till want of Sustenance made 'em pine away and die, as having no place to receive it at.

Some with Heads like Dogs, Wolves, Bears, Toads, and in many strange Shapes, which has been more immediately look'd on as a Punishment of Almighty God for the Pride, or other Sins of the Parents.

Many Women have brought forth *Blackmoor* Children, tho' fair themselves; but how fairly they dealt with their Husbands we determine not, tho' some hold it may be done by the force of Imagination striking on the *Fetus* in the Womb after Conception.

Q. What other Cause may produce Deformities of this kind?

A. Some-

A. Sometimes the streightness of the Womb occasions many Inconveniencies ; for *Nature* not having room sufficient to frame her Work in, it is crumpled or rump'd up, which makes some to be hunch-Back'd, crooked Arm'd, Legg'd, and Shoulder'd, wry Neck'd, flat Headed, and the like.

Another Cause of Deformities happening, is the Child being tender as a Gristle in the Womb, and the Mother ill placed in sitting or lying, or any other uneasie posture of her Body, in the time of her Childing.

Sometimes a careless Midwife may lame and crumple a Child in drawing it forth ; and often they cause it to be born deaf, by pressing the Ears too much, and breaking or spoiling the Organs of Hearing.



Mixt PROBLEMS of divers Matters.

Q. WHY do Women take those Men for Asses that are too eager in their Desires to enjoy or (as they say) are over-fond of 'em?

A. Because being sensible of their own Imperfections, they admire Man should so meanly betray the Honour and Dignity of his Sex, (who was made to command, and not servilely obey) as to descend so much below his Reason and Understanding, in being so ridiculously sensual.

Q. Why is Cupid, who resembles Love, for the most part painted naked?

A. To shew that all the Acts and Deeds of Lovers ought to be open and sincere, plain and naked-hearted, free from Treachery and Dissimulation.

Q. Who hath most Pleasure in the Bridal Night, the Man or the Woman?

A. The Woman, who hath both an active and passive Joy; and tho' she rises like blushing Aurora, yet such a tell-tale Lightsomness, Cheerfulness, and Mirth appears in her Face, as plainly discovers the chaste and pleasant Content she has receiv'd from her beloved Spouse.

Q. What is the highest Respect a virtuous Bride can give her Husband?

A. To be loving, obliging, and obedient to him in all lawful things, and to make him sole Master of her Body, and Commander in chief of all her Thoughts.

Q. Why do some Men, when they are drunk, imagine all Things run round?

A. By reason the Spirits that serve the Sight are mingled with the Vapours of the Drink, and so causing much Heat, the Eyes are set in a continual Motion, till the Fumes are allay'd. And in this condition doubtless was old *Copernicus*, when he broach'd the whimsical Opinion of the Earth's circular Motion, opposite to all Sense, Reason, and Demonstration, tho' in our Days many whose Brains grow like his, are of the same Opinion, yet cannot by any solid or convincing Argument maintain it.

Q. What are the Attendants on Love?

A. Pleasure, Travel, Pain, Sweet, Bitter, Life and Death.

Q. What are the immediate Joys that encourage Lovers?

A. Play, sweet Sleeps, soft Beds, charming Musick, rich Perfumes, delicious Wines, costly Banquets, wanton Refreshings, and suchlike ravishing Contentments.

Q. Why did Apelles paint Cupid with those words, viz. Spring and Winter?

A. By those Seasons he represents the Prosperity and Adversity that are Attendant on Lovers.

Q. How comes it to pass that some Stammer and others Lisp?

A. By reason the Nerves are shrunk that govern

vern the Tongue through much Oppression of Phlegm.

Q. Why are we colder after a good Meal, than before ?

A. Because the Natural Heat retires from the External Parts to the Stomach, that it may the better assist it in making the Digestion.

Q. What are the outward Signs of the Body, to judge of the inward Disposition of the Mind ?

A. A sharp Head and high Crown imports an ill-affected Mind.

Tall of Stature denotes but little Ingenuity, or (to be more plain) dulness of Wit.

Little Eyes, and a flat Forehead, denote a large Conscience.

Great Ears and a large Head, with a long Chin and Nose, denote a weak Understanding, or one not far from an Ideor.

A spacious Breast, long Loins, and a smooth Brow, not lowring with a sorrowful Aspect, denote a generous Temper of Mind.

Q. Who of the Ancients is accounted most famous for his Memory ?

A. Seneca, who writes of himself, that upon the bare repeating of a thousand Names by any Person, he could recount them again in due order.

Q. Why are Women softer and smoother than Men ?

A. Because they are more phlegmatick, cold and moist. and also have the help of Nature to expel those superfluous Excrements that remain in Man's Body, by the way of their Monthly Purgations.

Q. Why are those that have their Hair and Beards

Beards of different Colours noted to be dangerous Persons?

A. Because it denotes 'em to be unequal in their Humours and Tempers, light, and suddenly given to change, because the Humours of the Body are not simply distinct, but mix'd, and as it were confounded together, which inclines and disposes the Person to a treacherous and uneven Temper.

Q. How comes it to pass those Children that are born out of Marriage are more apt, ingenious, and of a sharper Wit, for the most part, than those that are born in it?

A. The Reason is given, they are got in a full Force of Love, and strong Desires of Enjoyment, which being attain'd as it were by stealth is commonly more eager than those of the Marriage Bed, which is too often perform'd with a kind of paul'd Indifference, especially when the Honey-Moon is over: So that the Animal and Vital Spirits in getting Bastards flow with greater force to mix with the Seed, and so enlivens it for a more prompt Effect in Generation.

Q. Why is it said those Children that are got in Adultery are very like the Husband, tho' he has no part in that Procreation?

A. Because a Woman seldom Cuckolds her Husband, how hot in Lust soever she be, without some Fear or Remorse of Conscience, which in the very Act makes her think of him, and fix a very strong Idea in her Mind, either as doubting a Surprise, or that she is injuring a Person to whom she has sacredly plighted her Vows, and ought to have kept herself constant; and this striking upon the *Fetus* of the Womb, makes an Impression

on the Seed and causes a Likeness: Or it may be that afterward often gazing on her Husband, and conscious of her Guilt, with some Remorse, it may work the same Effect.

Q. Why are Men of the least stature more subtle, prompt, and cholerick than those of a larger size?

A. The reason is, their Animal and Vital Spirits having a less scope to act in, are more vigorous in the Act of Generation or Procreation.

Q. What is the Cause of sudden Risings, as Pulses and Pimples in the Face? &c.

A. The Cause is an Enunciation of crude indigested Humours, proceeding sometimes from the moisture of the Brain, but oftener from bad Digestion, and the Heat of the Liver.

Q. How comes some Mens Hair to curl, and others not?

A. The curling of the Hair is caus'd by the heat and dryness of the Brain, and its own dryness, as an Exerescence, for want of a supply of Marrow to fill the hollow Tubes; for every Hair has a Cavity running thro' it, tho' so small that it is not visible, in which a Marrow or Oily Substance runs or proceeds from the effect of the Brain to feed it; and when that Nourishment fails, thro' overcoldness or dryness, the Hair falls off, and leaves baldness.

And the lankness of the Hair proceeds from a moist and cold Brain, which causes it to grow very lank and long; as we see in Women, who are generally much colder and more phlegmatick than Men.

Q. For what reason is Cupid painted like a Boy or Child?

A. Be

A. Because Lovers are frequently very foolish and childish, in spending their Time in Folly that might be much better imploy'd. It also signifies that Gaiety and Youthfulness should attend on a Lover, sequester'd from Cares and Anxieties; and likewise, that for the Toy and Knack of his light Affections, he will run the hazard of losing the Accomplishment of his most weighty and best Fortunes.

Q. What is the reason that when a Person gapes in the sight of others, it for the most part affects 'em all, so as to do the like?

A. There is a certain sympathizing Nerve in the Hinge of the Jaws, which has a Communication even with the Optick Nerves, and this kind of Motion of Gaping penetrating the Sight, the Optick Nerves convey the Motion by a similar Vertue to that Nerve or Nerves, (for some allow one on either side) which taking a kind of sleepy or tickling Impression from thence by a sympathetical Power, the Party cannot (without putting Force upon himself) refrain from imitating the Party he sees gape.



Problematical Questions of DREAMS, and their Interpretations in Answer to those Questions.

Q. Since many have been very inquisitive about the Nature of Dreams; and seeing we find some in the Scriptures (but more in History) that have exactly come to pass according to the Interpretation

tation of 'em, tell me what naturally causes 'em (if it be an Effect of Nature, and there is nothing of Divine in 'em, as some learned Philosophers have concluded there is?).

A. As to their natural Cause, it must be concluded the Soul of Man keeps an eternal Wake: Tho' the Body in Sleep is as 'twere still and quiet, and in a manner senseless, yet the Soul in that condition working insensibly upon the Organs of it, and especially on the Brain, move the Fancy and Imagination to take Impressions of Things that have been done in the Day-time, or in Time past, or such Things as we have thought and been intent on, when the busie Fancy strait conveys the Idea's to the Memory, which retains 'em so, that waking we often remember them, and account them to be most significant that make the deepest Impression on our Minds.

That they are sometimes sent by the Divine Will is apparent, in this way to foretell Things that shall come to pass; but then we must look on 'em to be supernatural, as *Joseph's Dreams*, those of *Pharaoh*, *Nebuchadnezzar*, *Daniel*, *Joseph* the espoused Husband of *Mary*, *Jacob*, and many others, which were sent immediately to foreshew what Things GOD had determin'd to do in the World: And the Prophets had most of their Prophecies reveal'd to 'em in Dreams and Visions.

Q. Now tell me, according to the Opinion of the Learned, the Signification of these Dreams I shall briefly mention; and first, what does it signifie to dream one is bitten by a Serpent?

A. That some Mischief will befall him thro' the subtile Contrivance of Flatterers pretending Friendship, or private Enemies.

*Q. What to dream of a black Coffin, with Mour-
ners about it, or to meet a Hearse?*

*A. It denotes the Death of some near Relation
or familiar Acquaintance.*

*Q. How to dream you see a Party lie dead, or
that your self is dead?*

*A. It promises Health and Prosperity to the
Party, or your self, as the Dream happens to be.*

*Q. What to dream your Shoes fall off your Feet,
or are old and torn?*

*A. It denotes Poverty and Distress, sometimes
a stay from Travelling by a long and tedious Im-
prisonment.*

*Q. How if you dream you find small Pieces of Mo-
ney, and gather them up?*

*A. This signifies Poverty, and many Disap-
pointments, contrary to our Expectation.*

*Q. What to dream you receive Money of ano-
ther?*

*A. This is a Sign you will receive Money un-
expectedly where it may be owing, or by the
Gift of some Friend, or else shortly fall into good
Business to obtain it.*

*Q. What to dream a Party is washing his or her
Hands?*

*A. If the Dirt comes off easily, it signifies some
considerable Matter in hand will be soon effected :
But if you dream it will not, or be very difficult
to be got off, then 'twill not be perform'd at all,
or at least not without some Pains and Labour
more than you expected.*

*Q. What to dream you are assaulted, and over-
come your Enemies, either Man or Beast?*

*A. It denotes you will become Victor over
some publick or private Enemy, prevail in Law-
Suits,*

and other Problems.

its, or by your Magnanimity escape some imminent Danger.

Q. What to dream you are flying in the Air ?

A. If very low, it signifies you will live in a very mean State ; if high, some Promotion waits you.

Q. What if you dream you fall from a Precipice, or other high Place ?

A. It denotes you will fall in your Worldly Affairs or Promotion.

Q. What if you dream you are in a spacious Chamber richly furnish'd, and kindly entertain'd therein ?

A. It denotes the Favour of Great Persons, by which you are like to rise to Honour and Promotion.

Q. What to see Men or Women about to be executed ?

A. It signifies you will be soon importun'd by some Friend in great distress for your Assistance.

Q. What if a Maid or Widow dreams a Man puts a Ring on her Finger ?

A. If it stays on, and does not seem to fall off, it denotes speedy Marriage ; but if it falls off, then Crosses and Disappointments follow.

Q. What to dream that one's Teeth or Eyes fall out.

A. The Loss of Children, near Relations, or Friends.

Q. What to dream one is talking with Spirits or Angels ?

A. That some extraordinary Secrets shall be reveal'd unto you ; or, That you shall soon discover some

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New and useful Problems.

some hidden Treasures or secret Things in Earth.

Q. What to dream a large Banquet is set before you, and when you attempt to eat it, 'tis suddenly snatch'd away?

A. It denotes you shall be very near Promotion and Preferment, yet lose 'em by another's stepping between; or else circumvented in some great Affair or Undertaking you have taken in hand.

Q. What for a young Man or Woman to dream they have their Sweethearts in their Arms, and are lovingly kissing 'em?

A. It denotes speedy Marriage, and a great deal of happiness in the Enjoyment of it.

Q. What to dream you see the Sun and Moon greater than ordinary, and very near the Earth?

A. It denotes you shall be near the Persons of Princes or Nobles, and be rais'd by them, on your own Genius, to Greatness and Honour.

Q. What to dream you see Crows or Birds of Prey flying under a dark Cloud?

A. It denotes an Eclipse of your Fortune, and Encroachment of Misery and Poverty upon you.

Q. What for a Maid to dream a Man ties a Garter?

A. That she shall soon have a Sweetheart that will marry her.

Q. What to dream you hear the hissing of Serpents, barking of Dogs, or roaring of wild Beasts, but yet you can't see 'em?

A. This denotes you have backbiting and dangerous Enemies, that would willingly hurt you but shall not be able to do it.

Q. What is it to dream one is at a Feast, and eats greedily?

A. It signifies approaching Sicknes or Penury

Q. *What to dream one sees Knives and Swords*

A. It signifies Quarrels and Contentions to ensue

Q. *What signifies it if a Man dreams he cut off his Privy Member, and it grows again ?*

A. That he shall bury one Wife and have another ; but if he dreams it grows not again, he shall bury him.

Q. *What to dream one's at Church, at Devotion*

A. It denotes a pious Inclination, with Joy and Happiness ; yet the Party shall be very Studious and Contemplative in the Mysteries of Religion.

Q. *What to dream you are Swimming, or see Swans in a River ?*

A. This denotes the Party shall travel by Sea or be adventurous in Merchandise.

Q. *What is it to dream you see a small Spring encrease to a Lake or River ?*

A. This denotes encrease of Riches by the addition of Friends, or an enlargement of Fortune by Marriage, as also Fruitfulness in Children.

Q. *What signifies it to dream of Thunder and Lightning in a troubled Sky ?*

A. It denotes the Party to fall under some extraordinary Displeasure, whereby he or she shall suffer many Afflictions.

Q. *What is it to dream you are pursued by a furious Bull, and in vain endeavour to escape ?*

A. It denotes you will meet with an implacable Enemy, that will pursue you to your utter ruin.

Q. *What is it to dream you see many Moons descend and juggle in the Firmament ?*

A. That there will be much Jarring and Contention among Friends and Relations,

Problematical Questions of Moles, Marks, or Spots, in Humane Bodies ; with Answers or Solutions of what they signifie, according to Aristotle and others.

SINCE GOD in Nature has placed several Marks on the Face, Limbs, and Bodies of Men and Women ; let us consider the Opinions of the Ancient and Modern Philosophers and Astrologers, what they may signifie as to good or bad Fortune. And first,

Q. What signifies a Mole on the Left side of the Forehead ?

A. It signifies good Success in Affairs by Building, Tillage, and Planting ; also that there is another Mole answerable to it on the Right side of the Breast.

Q. Of what Signification is a Mole on the Right side of the Forehead ?

A. That a Man shall marry early, and have a loving kind Wife, by whose Means he shall grow Rich ; and so of a Woman : And this is answer'd by another Mole on the Right side of the Belly, near the Privities.

Q. What a Mole on the middle of the Forehead ?

A. It denotes the Party to be much afflicted with Sicknes, a weak Brain, and often violent Headachs, Epilepsies, Apoplexies, and other Diseases incident to the Brain : It denotes also another between the Breasts.

Q. Of what Signification is a Mole on the upper side of the Temple ?

A. It signifies a Man or a Woman to be of a steady Fortune, with a continuance of Riches ;

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also happy Marriages, and a peaceable Life : It likewise denotes another Mole on the Extremity of the Belly.

Q. Of what Signification is a Mole on the Eyebrow, near the right Temple.

A. That the Party shall gain Esteem, Favour, Love, and Advantage, grow Rich by Legacies and Estates left by Friends : Also it denotes another on the right Line.

Q. Of what signification is a Mole on the right Temple, below the Eye ?

A. It denotes, to either Sex, that by Prudence and Industry they shall obtain Riches and great Preferment ; also that there is another answerable on the right Thigh.

Q. What a Mole on the left Cheek near the Ear ?

A. It signifies Vexations and Crosses by Children, loss of Estate ; and to a Woman hard Labour in Childbearing : And has another answerable on the left Thigh.

Q. What a Mole under the hollow of the right Eye, near the Nose ?

A. It denotes a Man to be hasty, proud, and subject to Anger ; a Woman to be Vain-glorious and Self-conceited, of a weak Understanding, tho' pretending to much Knowledge ; and there is another on the middle of the Belly.

Q. What a Mole on the upper part of the right side of the Nose ?

A. This denotes the Party much given to Venery, one that shall be belov'd of many, yet but short-lived ; and it signifies another on the Privy Members.

Q. What a Mole near the right Nostril ?

A. It predicts to a Man good Fortune in all his

Undertakings; to a Woman, Love and Chastity; and denotes another on the right Shoulder.

Q. What a Mole on the Extremity of the Nose?

A. It depotes a Man much given to Women, by which he will weaken himself, and greatly impair his Health and Strength; and to a Woman, to be loose and inconstant; it also denotes another on the right side of the Hip.

Q. What a Mole on the right corner of the Mouth?

A. It promises Plenty, and happy Marriages; and denotes another on the left Arm, between the Elbow and the Wrist,

Q. What a Mole on the middle of the upper Lip?

A. It signifies the Party shall meet with Crosses and Disappointments in reaching at Preferment, not being able to attain it; and another on the Privy Members.

Q. What a Mole on the middle of the Chin?

A. It denotes the Party to be hasty and cholerick, and of great Strength; but by too much quarrelling great Troubles and Crosses will ensue; and it signifies another on the Shin-bone, right or left.

Q. What a Mole on the bottom of the Chin?

A. It signifies the Party capable of Learning, and studious of Arts and Sciences; and denotes another on the right Hip.

Q. What a Mole on the Neck or Throat?

A. It signifies Trouble and Vexation, by reason of the Party's evil Disposition, often a violent Death; also another between the Navel and Privy Members.

Problematical Questions and Answers in Metoposcopy ; or Signification of Lines in the Face, tending to shew the Disposition of the Party.

Q. Seeing Nature has so admirably set forth the Features of the Face, what can be gather'd from 'em, to shew the Disposition of the Party, or what may befall him or her in the course of their Lives?

A. Either Nature or Time places marks there that are significant to this purpose ; as, Three streight Lines in the Forehead, with any Section or Cutting, shews the Party to be very fortunate in his or her Undertakings.

A Cross directly in the middle of the Forehead with scattering Lines about it, denotes the Party will do such things as will bring him or her to an untimely End.

Four Lines that meet in the middle of the Forehead, with a full Line over them, and cut with two cross Lines, denotes the Person wise and studious, desirous of Riches, but yet very unfortunate.

A Circle in a Line that passes crooked thro' the Forehead, having a Circle on any part of it, signifies Disappointment in Love, and many Injuries by slandering Tongues.

Two Lines crossing the Forehead, waving in and out, like the waving of Water when driven by the Wind, threatens the Party with danger of drowning.

A crooked Line between two streight Lines denotes the Party fortunate, and very subject to heap up Riches, but withal inclin'd much to Covetousness.

A Line beginning at the left Eyebrow, and passing obliquely to the Extremity of the Forehead, on the right side, signifies the Party to be endow'd with a worldly-minded Spirit, and one whose Care to get Riches shall render his or her Life uneasy, by reason of the Crosses that therein will happen.

Two Lines arch-wise, bending over the Eyebrows, one of them being cross'd with another Line, and the other three short Lines in a length on the extremity of the Forehead, shews the Party to be sharp-witted, undauntedly couragious, graceful, eloquent, prudent, and politick.

A short streight Line over the Eyebrow, and three short crooked Lines over that, denotes the Party industrious, courteous, and affable.

Problems in Physiognomy ; to know the Inclinations of Men or Women, as to their Minds, Manners, and Behaviour, by their Complexions, &c.

Q. *THE Philosophers are of Opinion (Aristotle, Pythagoras, Plato, and Socrates) that the Planets governing and disposing the Bodies of Men and Women have a wonderful Influence over their Minds also, to dispose them to Good or Evil, (and so of their Fortunes) and that it may be visibly seen in their Complexions, insomuch that their inward Thoughts and Dispositions may be known ; therefore how shall I know 'em ?*

A. It is so held, not only by the Learned Ancients, but by many of our Age ; and thus they give Judgment, viz.

A Swarthiness in the Face, of a shining Black, denotes the Party to be of a dull or heavy Tem-

per, slow to Action, fearful, cautious, and not subject to quarrel.

A greenish Complexion, with a sprinkling of black Specks here and there, signifies a cholerick Person, subject to Brawls, Quarrellings, and Law Contentions.

A ruddy Complexion, not over-fat, with a full Eye, denotes the Party to be of a prompt Wit, crasy to over-reach, and little regards the Trust repos'd in him.

A pale or dusky Lead-colour'd Complexion, the Forehead flat, with Eyes standing much in, denotes the Party to be of a restless Mind, soon angry, extream bashful, fearful in the Night, and often troubled with affrighting Dreams.

A fair white Complexion, with little Eyes, denotes the Party to be of an even Temper, good-natur'd, seldom angry, or if so, quickly pacified; faithful to his Friend, and constant in Love.

A dark-brown Complexion denotes the Party unstable and inconstant, cholerick, and soon angry, luxurious, and given to many Extravagancies.

A flushing Colour, rising and falling at times, and seldom being at a stay, shews an intemperate Brain, the Party much subject to Whimfies and extravagant Projects: It threatens also Lunacy and hot Diseases, as Fevers, Calentures, and the like.

A ruddy stable Complexion signifies the Party to be a Lover affable, kind, and courteous.

Questions and Answers, by way of Problem, in Chiromancy; or what will befall Men and Women foretold by Lines and Marks in the Hand, &c.

SEEING the Egyptians, Chaldeans, and others of the Ancients who were accounted the Sages, or Wise Men of the World in their Times, laid so great a Stress on *Chiromancy*, as to foretell what should happen to the Party by certain Lines and Marks in the Hand, govern'd by the Planets and Signs of the *Zodiac*; in this our most useful Discourse let us consider it, and shew the World what may be expected from it. And first,

Q. How are these Parts of the Hand or Lines govern'd?

A. The Thumb by *Venus*, the fore-Finger by *Jupiter*, the middle by *Saturn*, the third and the little Finger by *Mercury*, the Plan of the Hand by *Mars*, and the Brawn of the Hand under the little Finger by *Luna*.

Q. How are the remarkable Lines in the Hand distinguish'd and govern'd?

The Table-Line, or Line of good Fortune, is govern'd by *Jupiter* and the Moon; the Line of the Heart, or Line of Life, by the Sun; the Line of the Brain by *Mercury*; *Venus's* Girdle is govern'd by that Planet; the Sister to the Line of Life, or Line of Death, is govern'd by *Saturn*; the Percussion is govern'd by *Mars* and *Luna*; the Circle of the Wrist by *Mars* in the Sign of *Aries*.

Besides these, there are other Lines not common to all Hands; as, the Way of *Saturn*, the milky way, the way of the Sun; and for this reason

son they are taken as uncertain Lines, not to be found in one Hand in ten, and therefore we shall the more slightly pass 'em over.

Q. How are these to be found in the Hand, that any one may observe 'em at leisure?

A. The Line of Life encloses the Thumb, separating it from the hollow of the Hand or Plane of Mars.

The middle Natural Line has its beginning at the Mount or Ball under the fore-Finger, near the Line of Life, and ends at the Mount of the Moon.

The Brain-Line, usually call'd the Liver-Line, stretching to the Table-Line, makes a Triangle.

The Line of Fortune, or Table-Line, takes its rise under the Mount of Mercury, ending near the Index and middle Finger.

The Girdle of Venus has its beginning near the Joint of the little Finger, and stretches between the fore and middle Finger.

When the Line of Death plainly appears, it makes a Counter-Line to the Line of Life, and for that reason is call'd the Sister-Line, ending equal with it.

The Percussion is between the Mount of Venus and Luna.

The Wrist-Lines, usually nam'd the Rescetae, are only the Joints that part the Hand from the Wrist; and the Mounts are but the fleshy Parts or little Risings at the Roots of the Fingers, and are ruled by the same Planets mention'd for the Fingers, &c.

Q. What is to be observ'd by those several Lines relating to good or bad Fortune? In order to solve these Queries, begin with,

1. *The Line of Life.*

A. If the Line of Life be double, as sometimes it is, it promises long Life, Advancement, and Honour.

If this Line appear clear and ruddy, not broken by any Section, it denotes the Party will be prosperous, and live to Old-age; but if broken, a short Life, with Sicknes and Misfortunes attending.

If three Stars be visible in this Line, it denotes the Party will be subject to Slanders and much Infamy.

If three Circles appear, it denotes the Party will be much belov'd, as also happy in Marriage and Children.

If there appears a plain Cross between the middle Natural-Line and the Line of Life, then it denotes the Person to be of a Noble Spirit and Temper, liberal, wise, and temperate.

2. *The Table-Line.*

If this Line be of a lively colour, broad, and fair to be seen, it denotes the Party shall enjoy long Health, Content of Mind, and Success in his Affairs.

If this Line be cross'd towards the little Finger, it threatens Sicknes, Poverty, and Distress.

If this Line be divided into three parts, or only double, it signifies the Party charitable, liberal, of a courteous Behaviour, winning the Favour of great ones, and thereby advancing a Fortune either by Marriage or Industry.

If this Line be crooked and unseemly, it denotes Danger to the Party by some violent Death by furious Beasts, or suchlike sad Accident.

3. *The Cephalic or middle Natural Line.*

If Crosses be found in this Line, it denotes the Party rich and fortunate, yet given to Fraud and Deceit.

As many Lines as appear between this Line and the Table-Line, denote so many Sickneses; yet the Party shall 'scape Death, and live to be very old.

If this Line be thick and clouded, it denotes the Party shall escape Death, and live to be very old.

If this Line be thick and clouded, it denotes the Party of a weak Constitution both in Body and Mind; also liable to labour under many Infirmities.

This Line being double, denotes Succession of Inheritance will fall to the Party in or about the middle Age.

The same double in a Woman, denotes she will have five Husbands, live to be very old, yet die Childless.

4. *The Girdle of Venus.*

If there is found in this Line Divisions or Sections near the fore-Finger, it denotes the Party to be very lustful, which will bring Poverty and Disgrace.

Two Crosses on this Line, one being on the one side of the fore-Finger, and the other bending toward the little Finger, denote virtuous Meekness and a modest Behaviour, one often tempted to Lasciviousness, yet with Deregulation declining it: And he that hath such a Wife need not fear being a Cuckold. Those that have this Line fair, it denotes 'em to be fruitful in Children, whether lawfully or otherwise begotten; to be
more

more desirous of carnal Copulation than those that are without it, as being of a hot Constitution, which makes the Seed the sooner flow to the Genital Vessels for its evacuation.

5. *The Plane of Mars, and Mount of the Moon.*

The Plane of *Mars* is in the hollow of the Hand, in nature of a Triangle.

If the Sister-Line, or Line of Death, passeth thro' this place, it denotes the Party (if a Man) to be a Warriour, but in the end to fall in Battel; if a Woman, that she will die of some hot Disease or else in Childbed.

When the Lines beginning at the Hand-wrist are long within this Plane, reaching towards the Brawn of the Hand, they denote a violent and turbulent Spirit, which will bring much Misery to Life.

If there be a deep large Cross in the middle of this Plane, it denotes the Party a very hot-headed zealous Bigot for Religion, but of more Fury than Wit.

If the Line under the Mount of *Luna* appears pale, black, or gross, it threatens Improspereousness and ill Success in Undertakings.

If Stars appear on this Mount, it denotes the Party shall be compel'd to travel.

If Crosses, then Riches and Honour is signified.

A Round or Circle on the Mount, denotes the Party shall be troubled with Defects in the Eyes, and in the end much Dimness, if not Blindness will ensue.

6. *The Wrist-Line.*

Four Lines on the Wrist well colour'd, that the Party shall gather Riches in Youth by Industry, but with Crosses and Vexations; yet, if no fatal

Accident happen, may live to overcome 'em.

One Line, which seldom happens, denotes the Party will suffer Lameness by Casualty, and be but short-lived.

If the Lines be wide and scatter'd, the Party is open-hearted, not fit to be trusted with Secrets, a great Babblers, and full of impertinent Talk.

Problems of the wonderful Works of God in irrational Creatures of various Kinds; their Nature, Understanding, Industry, Artifices, &c. all exceeding admirable, setting forth in some degree the great Wisdom of the Creator of the World.

Q. *SEeing GOD in his Wisdom has made every Creature excellently good in its Kind, and subjected them various ways to the Use, Profit, and Service of Man, tell me what Opinion the ancient Philosophers (particularly Aristotle, Pliny, &c.) had of the Knowledge, Understanding, and excellent Qualities GOD hath endow'd those with which we term Irrational Creatures, and that in their order, as I shall demand the Particulars of you; and first, what of Beasts in general?*

A. As for Beasts in general, first, I must say there is a great deal of difference by Nature; some are bold and hardy, others fearful; some wild and savage, others tame and gentle; some walking in Herds, others wandering alone; some Arm'd, and others trusting to Swiftness for their Safety.

Q. *Have Beasts any Sense of Virtue and Gratitude ingrafted in their Nature?*

A. Not to that rational height that Man does or ought to exercise; yet we cannot but observe

the impressions and shadows of many Virtues in some, as Prudence, Magnanimity, Fortitude, Gratitude, Clemency, and Docility.

Q. In what do these things consist? And how do the Creatures manifest them to our Apprehension?

A. They are naturally possess'd with Love, magnanimously contending about it when oppos'd: They have Prudence to shun those things that are hurtful; and many of 'em foreseeing Scarcity, or presaging a cold Winter, gather and lay up Food in store, to supply their Necessities, and preserve Life; as Men in a City do when they are apprehensive of a Siege, or have Presages of an ensuing Dearth.

Q. Have Men edified by the Observations they have taken from the Creatures?

A. Yes, in many things; the Creatures have taught 'em the undoubted Presages of Weather and Air, the Art of Vocal Musick, to be prudent and careful for their Young, faithful in Love, to be true Observers of the Rights of Friendship and Chastity; and in many things govern and order themselves so well, without Man's Counsel or Direction, that many of the ancient Philosophers made it a Question whether the Creatures (many of 'em) were not endow'd with Reason to a very large degree; insomuch that Solomon sends us to the Ant to learn Parsimony and Diligence of her. And *Isaiab's* reproving the Children of *Israel* for their Rebellion against *GOD*, sends them to the Ox and Ass, for they do not only know, but reverence their Masters.

Q. How came the Vertue of the Herb Dittany to be first found out by Man, for drawing Iron out of wounded Bodies?

100 New and useful Problems.

A. *Aristotle* tells us, it was first observ'd in the Goats of the Isle of *Crete*, who being wounded with Arrows, and they sticking in their Flesh, they immediately ran and eat this Herb, which in a little time made them fall out, and cured the Wound. *Pliny* tells us the like of the Hart; and indeed all Creatures, when sick or hurt, by Instinct of Nature have recourse to some Remedy or other for Recovery; and Men have learnt many things from them this way.

Q. Tell us how some of these Things have happen'd.

A. The Vertue of *Celandine* for the Eyes was first noted by the Swallows rubbing the Eyes of their Young with it to clear their Sight. The like of *Fennel*, from the Observation of Serpents rubbing their Eyes with it when they came forth in the Spring from their dark Recesses. The Tortoise, to defend and strengthen herself against the biting of the Viper, eats *Winter-Savory*. The Toad, to do the like against the Spider, eateth *Plantane*.

Q. How do Bears, when they are sick, cure themselves?

A. When they first come out of their Caves, where they sleep in the cruel Cold of Winter, (eating *Mandrake* and other sleepy Herbs to cause it) they search for the Herb *Aron*, by us call'd *Cuckopint*, and eat it, which opens their Pipes, and takes away much of their Drowiness; but, to expel the cold Poyson, they eat *Pismires*, and catch 'em after this crafty manner, viz. They lie down near an Ant's Nest or Hillock, and cast a Foam out of their Mouths, the Scent of which attracts the Ants to it, and when the Bear per-

ceives it is full of 'em, and that they stick fast in it, he licks up his Foam with the Pismires, which (as a Purge) expels the ill Humours with which he was infected. We also see Dogs give themselves a Vomit with a sort of Grass, thence call'd *Dog-grass*.

Q. By what Creature were Clysters first observ'd to be taken, and so imitated by Men to their Benefit?

A. Pliny and others tell us, the Bird Ibis haunting the Sea-Coast, and not unlike to a Stork, when she perceives herself ill, (her Disease chiefly happening in the Bowels) she fills her long Bill with salt Water, and putting her long Neck between her Legs, thrusts her Bill into her Fundament, and there discharging the Water by blowing it into her Guts, cures herself of the Obstructions in the Bowels.

Q. From what Creature was Phlebotomy, or Blood-letting, first observ'd?

A. From the Hyppotamus, or River-Horse of Nilus in Egypt, who being great in bulk, and a huge Devourer, when fill'd with too much superfluous Blood, he makes to a Rock, and on some sharp part of it rubbing his Thigh, he opens a Vein, and when he has evacuated as much as he thinks convenient, he stops the bleeding by rolling in the Mud on the Banks of the River.

Q. From what Creature was the Observation taken to set Centinels for the security of Encampments?

A. 'Tis held, Ulysses found out the Advantage of it a little before the Wars of-Troy, by making an Observation from the Cranes; for when they gather in Flocks on the Banks of Rivers, or in

Marshes, Lakes, &c. one is set as a Centinel to watch, to prevent a surprize, whilst the others are busied in getting their Food, or sleeping: The posture he stands in, is on one Leg, holding a little Stone in the Claw of that which is lifted up, just over that which is fix'd on the Ground, with his Head erected in the Air, so that if he happens to doze or sleep, the Stone dropping out of his Claw upon t'other Foot, wakes him; and if he sees any Danger approach, he gives the warning Cry, upon which all of 'em take the Wing for their Safety.

Q. How is the flowing of the River Nilus known by the Crocodile, or River-Tyrant?

A. This monstrous Creature, who lives as well at Land by turns as in the Water, produces its Young (as Naturalists hold) by laying Eggs and covering 'em in the dry Sand to hatch a little before the time of the River's flowing, which being found by those that search for 'em with intent to destroy 'em, is a certain Sign how far the River will rise; for by instinct of Nature this Creature places them at the utmost Bounds of the Water's flowing; which is very strange and wonderful.

Q. When and why does the Crocodile weep?

A. When he comes on Land, and has insnar'd or surpriz'd any Humane Body, and devour'd it all but the Head; yet that not being sufficient to fill her hungry Maw, she shelters her self among the Rocks, imitating humane weeping, to draw some other unwary humane Creature thither, as supposing it may be a Woman in Distress, whose Lamentation or Wailing he imitates, when being in the Danger, he leaps forth, seizes and devours his Prey. And from this Deceit such as feign or

dissemble Weeping are said to shed Crocodile Tears.

Q. By what Stratagem does the Leopard take the Prey he most delights in?

A. He haunts the Woods where there are store of Monkeys, who mortally hate him because he usually preys upon them, and finding he cannot come at 'em on the Trees, where they jump and are too nimble for him, he lies down in some open place where they may see him, stretching at his length, lolling out his Tongue, and groaning as if he was dying. This makes the *Monkeys* rejoice and chatter in triumph over their Enemy; and at last, he seeming to be quite dead, holding his Breath, they send down a Scout to approach him, who by a Sign assuring the rest he is dead, they immediately descend, and leap about him, chattering and rejoicing, some pissing on him in derision, others dunging in their Paws and throwing it at him; but on a sudden all their mirth is quash'd, for seeing his Opportunity, he leaps up, and catches most commonly three of the fattest of 'em, two in his paws, and one in his mouth, and makes a Feast of 'em, whilst those that escape his Fury run crying and screaming away in a most lamentable manner.

Q. By what means does the Rattlesnake cause the Squirrel to descend the Tree, and leap into his Mouth to be devour'd?

A. Of these Snakes there are many in *New-England*, and other parts of the *West-Indies*, very large, as five, six, or seven foot long, and some as thick as a man's Thigh, being very dangerous to those that straggle in the Woods and By-places where they lurk. These, so many Years old as

they are, have so many Knobs or Rattles on their Backs, which (when they shake themselves) make a confus'd noise like the Clack of a Mill: Their Eyes are broad, red, and shining like Fire, which the Snake fixes upon the Squirrel, who is in the Tree with his Mouth wide open, and the Rattles going all the while, so that the poor amaz'd Creature keeping his Eyes fix'd on those of the Snake, is so transfix'd that he cannot move away to escape, but remains as a thing enchanted, and is drawn into the Snake's Mouth by a kind of Compulsion, as the Magnet or Loadstone compels the Needle by attraction, and so is unavoidably devour'd. -

As for the natural Cause, 'tis held, that the Rays of the Serpent's Eyes darting in those of the Squirrel, so blind him, that taking the Snake's Mouth for a Hole or hiding-place of safety, by an unlucky Mistake he leaps into it, and so immediately perishes.

Q. How do Birds, when they have many Young ones in a Nest at one time, distinguish to feed 'em severally, that some are not over-fed, and others starved, seeing they bring but for one at a time? -

A. They have a certain Knowledge of 'em, as we have of our Children, and can surely distinguish them one from another, and so feed 'em all round in course; tho' those that have been fed gape and cry never so much, they get not a bit till it comes to their turn again: Nay, some Birds, Sparrows especially, have that Knowledge that if one of their own be taken out of the Nest, and another of the same kind and fledgness plac'd in its room, they so distinguish it from their own that they will not feed it, but suffer it to starve, com-

tho

tho' it makes never so much Complaint for Succour.

Q. Does the Cuckow, who is stiled the Herald of the Spring, hatch her own Young ?

A. No, but for the most part liveth by sucking the Eggs of other Birds ; she having destroy'd 'em lays one Egg, and no more, the Ground being white, and speckled thick with blue and black Strains, and that often in the Nest of a *Washdisher* or *Watermagtail*, and of a *Hedge-sparrow*, which the poor deceiv'd Bird hatches and feeds so long, till the foster'd Bird greedily catching at the Meat the Feeder brings, with its wide Mouth almost bites its Head off, making it very sore ; yet the foolish Bird will not give over feeding it till it flies away, and so frustrates all its Pains and Expectation. And for this Cause those that are deceiv'd, and Father another Man's Child, are call'd (in derision) *Hedge-sparrows*.

Q. What is the Nature of the Bombex, or Silk-Worm, who makes so many Ladies fine with its Labour ?

A. A mighty Wonder of God's Power and Providence is shewn in this little Creature, as well in itself, as because its Labour produces such store of Wealth to many Thousands of People, by which they are in great measure enrich'd, and come to be Great Men.

At first we find it to be a little Egg, somewhat flat, and of a blewish colour, about the bigness of a Pin's Head, sticking fast to a Leaf of Paper, of a glutinous substance, from whence it cannot be taken without breaking. Out of this Egg, about the latter end of *May*, or beginning of *June*, comes a little black Worm, small as a Pin, which feed-

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feedeth on *Dent de Leon*, but chiefly on Mulberry-leaves, grows to about the length and almost the bigness of a little Finger, being white and softer than Downe; it hath a Snout like a Hog, and eight stump Legs, with a broad Tail, and so transparent, that when it comes to its full growth 'tis ready to spin a Skein of Silk; 'tis visible in the Body of it, which Nature by a wonderful way has generated of the glutinous and more concrete part of the Nourishment, and when this plainly appears, they leave off eating, and seek a place to fix their Clew on, by fastning Threads across, and almost every way; then the Supporters being fix'd, they proceed to wind themselves up a Ball oval, and about the bigness of a Pigeon's Egg here, tho' in the hotter Eastern and Southern Parts much bigger; and the Silk being unwound all in a Clew, unless broke by accident, the Worm yet remains wrapt up in a Coat of Silk felted like a Hat, which will not unravel; and being taken thence, her form is quite chang'd there appearing nothing but a red Husk, which soon breaking, out comes a Butterfly, or a thing perfect in all parts, Head, Body, Horns, Wings, &c. like one, when immediately the Males and Females seek each other, and engender by the Tails, and after an hour or two separate; then the Female falls a laying Eggs as fast as she can put 'em out, to stock the ensuing Year; and neither Male nor Female eating any thing after spinning, they pine away and die. The Silk of the Female is yellow, but that of the Male white.

Q. Why is the Ant or Pismire, so little and contemptible a Creature in our Eyes, call'd Wise and Industrious?

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A. Because this little Creature has abundant Store in Knowledge; *Pliny* saith, they have among them the Form of a well-govern'd and well-order'd Commonwealth: And 'tis wonderful to see how they seize on a Grain of Corn, which if it be too heavy for one or two, more set to it, and lift and move it along with head and Shoulders, till they have got it to their Hoard, and laid it up in order with the rest, for their Winter Store of Food. Or if it be so big that they cannot carry it, they bite it in half, and take it at twice. They also bite off the spirey part of the Grain, to prevent its growing in their Hoard, and so spoil and grow musty, which if at any time it begins to be, they bring it out to airing on a Sunshiny Day; and when the Moon is at the Full they follow their Work in the Night, but if she does not shine they take their Rest: Wherein they shew themselves to have some Knowledge of the Heavenly Bodies. And the often trampling of their little Feet wears plain Tracks or Pads in the Grass. It is held, that they bury their Dead with much Decency and Order.

What Words shall I use (saith *Plutarch*) to express sufficiently the Diligence and Industry of the Pismires? There is not among all the great Things in Nature a Sight of greater wonder than these, for in these little Creatures are seen the Marks of all Virtue.

The often meeting of different Colonies, shew they hold a Correspondence and Friendship; and it has been observ'd, one Colony has lent Corn to another, which has been exactly repaid the following Year. And as to their Virtues,

Their Alacrity in undergoing their Labour

seems to shew their Fortitude and Magnanimity; they are eminent Examples of Temperance, Prudence and Justice : Their natural Charity appeareth, that if one of 'em being empty, meets another in the Path laden, he will go aside to make way for him.

As for their Winter hole, tis' not streight, but full of many windings, to keep out the Cold ; and at the end of it there are three Cells or Chambers, one to lodge in, the other is their Granary, and the third they bury their Dead in, and throw therein such Chaff and Refuse as they make.

And this is the more admirable, that GOD has bestow'd on the least Creature the greatest Portion of Skill, Industry, and Ingenuity, to supply the Defect of bodily Strength.

Q. In what is the Cunning of the Partridge in securing her Young e'er they be able to fly ?

A. They teach 'em to lie on their Backs, and to hide themselves among the Clods of the Ground, that (being almost of that Colour) they may not be discern'd ; and if any one approaches near them, the old ones, the better to draw 'em off from the young, will dodge 'em, as if they were unable to fly, so that the Party following in hopes to catch 'em being drawn off from 'em, all on a sudden they will take Wing, as if they had recover'd new Strength, and be gone.

Q. How does that Beast call'd a Succrath or Sue in the West-Indies, save her Young ones from the Hunters ?

A. This Beast, of a very monstrous shape, keeps, for the most part, about the Rivers and Sea-shore in *Florida*, and when she perceives herself pursued by the Hunters, she gets her Young upon

upon her Back, who with their Claws hold fast in her long Hair, and covering them with her large spreading Tail, flies swiftly to the Rocky Mountains, where they cannot clamber to pursue her; and therefore she is only to be taken by digging Pits, into which (they being cover'd with rotten Sticks, narrow at the Mouth, but wide and shelving within) she falls, so that when she assays to get up with her Claws, the Earth crumbling away, she falls in again, and cannot make her Escape.

Q. How is it that a Cock, who is so little a Creature, can terrifie and put to flight the most couragious Lion, who fears neither Huntsman nor Hounds, but will boldly charge thro' a Rank of Spears?

A. 'Tis the Property of a Cock, when he sees a Lion, to clap his Wings and crow aloud, whose shrill Sound hurts the Organs of the Lion's Ears, and causes a sharp pricking Pain, the which proceeding to the Opticks, dimm and hurt his Sight, to avoid which Inconvenience he retires.

Q. What is that little Creature that can destroy the Basilisk and Crocodile, the most cruel of Creatures? And by what means does he do it?

A. This Creature, about the bigness of a Rat, is call'd our *Ichnumon*, who when he intends to seek out and fight with his Enemy, rous himself in Mud and Slime, which drying in the Sun, becomes hard upon him like Armour, and then he goes to dare the *Basilisk* or *Cockatrice*: Whilst the Serpent darts his Poyson at him, not doubting to destroy him, the baked Mud and Slime secures him from the danger of his Sting, and so watching his Oppertunity, he catches the Serpent by the Throat with his Teeth and strangles him.

As for his Enmity against the Crocodile, it is irreconcilable; for, finding him sleeping upon the Bank of a River, which is usually in hot Weather, he tickles his Throat, which is so pleasing to that huge devouring Creature, that unwarily he gapes, when the *Ichnumon* taking his Opportunity, leaps into his Mouth, creeps down his Throat and gnaws his Way out again at his Belly, which is soft and tender, and by that means kills him.

Q. How does the Lobster prey upon the Oyster seeing he is fenced with so strong a Shell?

A. The Lobster waits diligently till the Oyster opens his Shell to take in the Air or Dew, and then softly creeping with a Pebblestone in his Claw, he suddenly claps it into the Shell, so that the Oyster not being able to shut its Shell again the Lobster with his long Snout sucks him out for his Food.

Q. How does the Fish, thence call'd the Fisherman take his Prey?

A. He has two Wallers under his Throat, like those of the Turkey-cock, which he can let down at pleasure to a great length like a Bair, the scent of which draws the Fish to nibble at it, and when he feels they have got fast hold, he suddenly draws 'em again, as an Angler does his Line, and falling on the Fish, devours as many as he can the rest he shakes off.

Q. What is that little Fish that will stop a Ship under Sail in spite of Wind and Tide? And by what secret Power has it such Force?

A. It is a *Romera* or Stop-ship, in a manner round, and full of hard Scales, not above a Foot and a half any way, who clinging fast to the Keel of a Ship, by a kind of Magnetick Quality stay

it and often makes it turn round, and for a time it can make little or no way, so that some Mariners, being ignorant of the Cause, have been in great Fear, as supposing they had fallen on a Rock or Sand, ready to be cast away.

Q. What is to be consider'd of Bees in their Order and Government, excellent Polity, and Prudent Management of their Affairs?

A. These Creatures, tho' little, are yet of wonderful Sagacity, and much Magnanimity; they have a Queen, who is Regent in every Stock, short-wing'd, long-bodied, straight-leg'd, shining and dapl'd with Spots of Gold, and on her Head a kind of Feather in the Figure of a Diadem, and she has a waxen Palace curiously fram'd; and separate from the rest, with her Attendants about her, and never labours; but is kept at the Publick Charge; she goes not abroad, but the whole Swarm attends her, having warning some time before by a Sound like that of a Trumpet, and where she lites, the rest encircle her; they fight for and bear her on their Backs if she be hurt or weary; if she dies they mourn, and often contend so strongly about chusing another, that oft times all goes to wreck.

They are held to be very much skill'd in Weather; for if they perceive it will be Stormy or Rainy, they will not go abroad, or at least but a little way from their Hives; and if abroad, and suddenly taken by the Wind, they'll poize themselves against it, by taking little Grains of Sand or Gravel, and fly as low under it as they can: But if it be Fair VVeather they boldly venture far abroad to seek the Flowers and Honey-dews, from whence they collect their VVax and Honey, load-

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ing their Thighs with the former, and bringing the latter in their Mouths, where those that stay at Home by turns are ready to unlade 'em, and order the work within the Hive, being commonly the elder *Bees*, the young ones going abroad to Labour. They are exceeding diligent at their Work, and punish those that are lazy, keeping all neat and clean within.

Q. Do Bees breed by Copulation of Male and Female?

A. No, they do not copulate; for tho' the *Drones* among 'em by some are accounted Males, having no Stings, and unable to get any Honey, they engender not with 'em, but only (as is properly said) thro' the Masculine Heat of those Associates the Female *Bees* conceive: Tho' some will have it they only engender a certain slimy Juice from Herbs and Flowers in a critical Season, which being put into their little Cells, and cover'd over with a thin Wafer of Wax, the heat of the Multitude in the Hive produce the Skeddons, or young *Bees*. Tho' Experience shews us 'tis their own Seed laid or shed in those waxen Cells that produces the young ones, who at first are like a little Maggot, which growing, the Husk opens, and a *Bee* is produc'd.

Q. Do the Drones always continue with 'em?

A. No, for when they have serv'd their turn they either kill 'em, and throw 'em out of the Hive, or forcibly drive 'em out alive, and being unable to shift, they miserably starve to Death.

I might much more enlarge on the Excellency of these Creatures, but being confin'd to Brevity, I must omit it, and pass to other Admirable Wonders in Nature.

Q. How

Q. How does the Elephant, the biggest of all Earthly Creatures, act and feed, seeing by Reason of his long Teeth he cannot take any thing with his Mouth from the Earth?

A. He has a Trunk or *Proboscis*, that he uses instead of a Hand, which he can turn any way with ease, and reach up very high with it: It is wide and open at the End, and has a mighty Strength, so that he can pull down Branches of Trees, wild Fruits, and take up Grass, Herbs, or such Roots as he digs up with his Teeth, and easily convey 'em to his Mouth: It is of like use to take up Water out of the Rivers, where sometimes 'tis bit off by the *Alligators* or *Crocodiles*, who lurk close under the Banks, and then, being destitute of his Helper, he dies with Hunger.

Q. Why is it reported by Philosophers and Natural Historians, that this Creature has a Sense of Religion, and comes very near the Understanding of a Man?

A. It is so; for *Aristotle* says, they have a Devotion in their kind; and *Plutarch* says, they pray unto the Gods, and sprinkle or purge themselves with Water, and that with great Reverence they kneel to the Sun at its Rising, and to the Moon when 'tis in the Full, casting up Fruits and Flowers towards Heaven in token of Acknowledgment and Gratitude; and at the New Moon they go to Rivers in Troops, and wash themselves, then kneel down and hold up their Heads towards it a long time, sighing and groaning, and then rising up, very gravely march to the Wood, the Eldest leading the way. When they copulate they retire into solitary Places, to prevent any one's seeing 'em, as if bashful or ashamed. At

the Eclipse of the Moon they are sad and melancholly.

Q. Are they docile, to be taught or instructed?

A. They are wondrous docile, learning to flourish Colours, shoot off Guns, present Garlands to the fairest Woman, for they are much enamour'd with Women, and will follow 'em any where, even to Captivity, if they shew their naked Breasts. They have been taught likewise to write Letters in the Dust, to move at all Words of Command, and diligently practice in the Night what has been taught 'em in the Day.

Q. Have they any Sense of Gratitude?

A. Yes; they ever remember good Turns, and are slow to revenge Injuries, though it is in their Power.

It happen'd once at a Town in *India*, in their Madding-time, which is about *Midsummer*, that a Troop of 'em came running down from the Mountains, whereupon the People that kept a Market without the Walls hastily fled into the Town, and shut to the Gates for fear; one of the Elephants immediately repair'd to the Stall of a Woman that used to feed him with Leaves and Roots, and among other things finding a Child in a Basket she had left for haste and fear behind her, he took it up with his Trunk, and carried it to the Gate of the Town, where he knock'd aloud, but not gaining admittance, he hung the Basket on a Hook, and guarded it till the rest of them were gone, and then retiring, left it in Safety, as an Acknowledgment of his Gratitude for the Kindness the Woman had shew'd him.

Q. Why is the Stork said to be the most grateful and charitable of all Birds?

A. For

A. For two Reasons, viz. When she builds her Nest on any House, her Young being fledg'd, before they can fly she usually drops one of the farthest for her Landlord, as an Acknowledgment of his entertaining her without disturbance; and soon after flies away with the rest.

Again, when the Parents of the *Stork* are grown old, they help 'em to fly from one Place to another, bearing them upon their Backs or Wings when weary, and provide them Food as long as they live. For which great Sense of Piety the *Athenians* made a Law, That none should kill a *Stork* under a severe Penalty, because they shew'd such a Pious Example to Men.

Q. What Policy do the Wolves use to allure the Dogs out of their Strength, that they may Prey upon 'em?

A. They appoint a certain Place of meeting in a Troop near some Town; where all but one hide themselves, in the Evening, as covert as may be; then that one goes to the end of the Town or Village, and howlsterribly, to dare out the Dogs, whom having alarm'd, she retires, as if to save herself by flight, when the Dogs (who mortally hate the Wolves) eagerly pursue, till they come within the Ambuscade, then the other Wolves rush out, and seize them as their Prey.

Q. Why is it said that Apes come nearest Human Understanding of all Creatures?

A. There are various Stories about 'em: Some will have it, that they were once a People, who for their Sins were transform'd, and as a Punishment of their Crimes, as despising all Religion, were turn'd into these Shapes to be Sport-makers, and the Buffoons of the World. It is Fab'd, al-

so, that the Giants who fought against the Gods in the *Pelarian* Fields, were (in derision) turn'd into these Creatures. Some again, That they first proceeded from a mixture of Man or Woman with some Beast near resembling (as there are several in the World) part of Man's Intellectuals. But however these things may be, certain it is that they have a vast Portion of Knowledge, and are capable of Learning in a large Degree; as will appear by the following Relation:

The Duke of *Somes* in *France* had an Ape, of a large size, that was taught to dance to Musick, vault on the Rope, and with much Celerity climb up a Pole as high as a Mast, let off a Pistol, and exercise a Half-pike, turn the Spit, clean the Dishes, carry up Dishes of Meat to the Table, make a Bowe at the delivery, and speak many Words (that had been taught him) very plain, pull off his Cap, and lift up his Eyes very demurely when Grace was said, always going upright on his hinder Feet, unless weariness made him rest; so that many coming to the House, and taking him for one of the Servants, would ask him Questions.

Q. Why are Beasts cloath'd with Hair, Birds with Feathers, Fish with Shells and Scales, and Man (the chief of Created Beings) left as it were stark-naked?

A. Because GOD has endow'd Man with a Rational Soul, given Reason and an Understanding Heart, whereby he is enabled to provide such Necessaries for himself as will supply all Defects, (which other Creatures have not in their Power) as also that he may improve his Knowledge in the Study of Arts.

Of Artificial Rareties and Curious Experiments, by way of Question and Answer.

Q. *HOW* will you order a piece of Thread, so that the Flame of a Candle or Paper cannot set it on Fire?

A. Wrap it single round any piece of cold Iron that is of some substance, as close as may be, and the Flame, tho' held to it, will not so much as singe it.

Q. *What is the Natural Cause of this?*

A. The coldness of the Iron blunts and abates the force of the Flame, and keeps the Thread so cool, that the Fire has no Power over the Oily Substance in it, which is the Matter apt to take Fire.

Q. *How will you make a Wick for a Lamp that will not consume?*

A. Cut *Allom de Plume* fine and taper, put it in the place of another Wick, so that the half-part of it may reach the Oil or Spirits of Wine which is to feed it, then anoint the rest with the combustible Matter, and set it on Fire, and it will burn by continually drawing Nourishment to it, and not at all consume. And this Way was used in Ancient Times, in the Vaults and Urns of the Dead, so that some say a Lamp has burnt two or three Hundred Years, for this consumes the Matter much slower than any other Wick; besides, in such Places where the thin Air is excluded, the fat unctuous Vapour arising from the Putrefaction of the Dead, much contributes to the feeding of it.

Q. How, by Art, is it possible to make strong and solid Ice in the extreame heat of Summer?

A. Have a Stone-bottle, of what bigness you will, with Well-water, but not fill'd by a Pint, put into a Gallon or six Quarts three Ounces of the finest *Salt-peter*, and an Ounce of *Florentine Orice* finely beaten, and so proportionable to a less or greater quantity of Water; stop the Bottle close, and tie down the Cork, then let it down into a deep Well, and in the space of 4 or 5 Hours the Water in the Bottle will be frozen very hard, so that by breaking the Bottle you may take it in a Lump to cool your Wine, or use it as you please.

Q. By what Art (which some People thinks Force and Strength) do some Men break a mighty thick Bar of Iron, which seems impossible to those that are ignorant of the Device?

A. They take a Thread, and anoint it well with Soap, then draw it on the Iron backwards and forwards, till they have made a visible crease, after that dipping a Cloth in *Aqua-fortis*, they bind it upon the crease, and after it has lain four or five Hours, it has open'd the Pores of the Metal in that place, by wasting the moisture, so that it becomes brittle in a manner as Glass, and will easily break, tho' some have been taken for strong Men (or rather *Sampsons*) upon doing it.

Q. How did Mother Shipton, in the Reign of K. Henry the Eighth, deceive the People, when she held her Hankerchief in the Fire flaming, and yet it was not burnt?

A. *Aqua-vitæ* in those Days was known but to a few, and the old Women that lov'd it dearly, were forc'd to drink it by stealth, because

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I am having got a Bottle of it, dipt her Handkerchief in it, which being set on Fire, flamed; but the Spirit being spent, the Moisture remaining extinguish'd the Flame, and left the Handkerchief entire and unsing'd tho' some to this Day believe it was done by the Power of Magick.

Q. How may a sudden wind be rais'd out of a River or Pond, when no other wind is stirring?

A Take an Egg, make a hole at each end, and blow out all the Yolk and White, let the Shell dry, and then fill it with unslack'd Lime, and a little Powder of Sulphur; stop the hole then with Wax, and put it into the Water about a Foot and a half deep, when the Cold and Water that will sweat thro' the Shell will heat the Lime, and that will fire the Sulphur, which will burst the Shell on a sudden, and then a Cloud will rise out of the Water, with a great blast of Wind.

Q. What is an Eccho? And how caus'd?

A An Eccho is the Imitation of a Voice, or, the Repercussion or Reverberation of a Sound as that is only the Air in Motion, which reflected or refracted motion makes an Eccho; for if the Sound has nothing to oppose it, it moves on circularly, spreading wider and wider, tho' the utmost Circles still grow weaker and weaker: As we see if a Stone be thrown into the middle of a Pond, it causes many Circles, which widen by degrees, moving on till they reach the Banks, which if not very distant, by reason of the wideness of the Pond, cause the Circles to rebound. So when the Ear of a Voice beats against a Hill, Vall, or such Obstruction of its free Passage, the Voice rebounds again, tho' more faint, as if at a distance we hear VVords utter'd; and frequently

hollow Caves receiving the Sound of the Voice, violently return it again, because there it can find no further Passage.

Q. What artificial Means is there to make one Sleepy or Wakeful at pleasure ?

A. Cut off a Toad's Head whilst she is alive, dry it, and beat it to powder, then put it in a little Silk Bag, and by laying it to the Mould of the Head, it will cause Drowsiness and Sleep; if to the Pit of the Stomach, it will keep one Awake and Watchful.

Q. By what Device may one get Coneys or Rabbits out of their Burroughs, without the help of a Dig or Ferrit ?

A. Take Quicksilver and Orpiment in Powder, of each an Ounce, wrap them up in a piece of Leather, and tie it like a Ball on the end of a long Pole, cut a little hole in it, and set it on Fire, then thrust it as far as you can into the Burrough on the windy side, and the Scent of it will suddenly make 'em bolt out at the contrary holes to get fresh ones, so that with Nets or Dogs you may easily take 'em.

Q. How can Hair be made to grow where it is defective on any Part of the Body ?

A. To supply this Defect, make a thin Ointment of Hyssop-water, the Juice of Hemlock and Oyl or Cream of Tartar, and anoint the place often with it, and when at any time 'tis dry, wash it with a Liemade of Vine-Ashes and Vetches boil'd in Spring-water.

Q. Wherefore is it that by rubbing of our Eyes we cease to sneeze ?

A. Because rubbing excites heat in the Eyes, near to which the Sneezing is caus'd, and that being

being a stranger hear, nevertheless, a more strong one extinguishes the other which caus'd the Sneezing, and by that means it ceases.

Q. Why is it that Men and Women (for the most part) eat less in Summer than in Winter ?

A. Because in Winter the Cold predominating on the natural and exteriour Heat, it musters its whole Force to resist the encroaching sharp Air, and so causes a more lively Heat in the Stomach and Liver, to further and help Digestion; whereas in Summer the Heat pursuing the Cold, and driving it inward, it retreats to the Stomach and Liver, and so causes a deprav'd Appetite: And for this Reason the Water in deep Wells is hotter in Winter than 'tis in Summer.

Q. From whence proceeds Jealousie ?

A. From Envy and Love: Envy, to see a Party Belov'd by one we love: Love, thro' an Excess of Fear to lose what is so Belov'd by us.

Q. Why did the fam'd Painter Zuris paint Cupid in a green Robe ?

A. Not only to express the Youthfulness of Love, but also to moralize what the Colour Green signifies, which is Hope, and that all Lovers conceive.

Q. Why does a chaste Woman love him above all others who had her Virginity ?

A. Out of a certain retaining of her Virgin Bashfulness, when she offer'd up that innocent Sacrifice of her Chastity; as also out of an Esteem for him with whom she entrusted it.

Q. Wherefore are the scent of Perfumes less penetrating in Winter than in Summer, and not so easily smelt ?

A. Because of the Cold, which abates their

Force, and also thickens the Air, which making it become gross, hinders the thin and subtile Parts of the Perfume from spreading.

Of Spirits, Ghosts, or Apparitions; how they assume a Bodily Shape and Voice; and why they appear chiefly in the Night.

Q. *IS there a Thing that is usually call'd a Spirit or Ghost, which appears to People in a visible Shape?*

A. Many have so reported, and there has been whole Treatises written about 'em. They tell us, that *Brutus*, one of the Conspirators who had slain *Julius Caesar* in the Senate-house at *Rome*, sitting up late to write to *Cassius*, his Confederate, saw the Ghost of *Caesar* appearing to him, with a Torch in its Hand, and the three and twenty Wounds on the Body; and being ask'd by him who it was, answer'd, *I am thy evil Genius, and To-morrow I will meet thee in the Philippian Field*; and accordingly in the Battel fought there by him against *Octavian*, *Augustus Caesar*, and *Mark Anthony*, he was Routed, and slew himself to prevent falling into the Enemies Hands.

Q. *Seeing a Spirit on all Hands is held to be of an Immaterial Substance, thin and rarified as Air, how is it Spirits can assume so gross a Form as to appear to us in a Bodily Shape?*

A. Tho' a Spirit in its proper Nature cannot be an Object of a material Eye, as being in it self not Matter, yet it may be allow'd, that what appears to us is something that a Spirit assumes to form a visible Shape, as condens'd Air, or the like wherein it acts; as those Angels that appear'd

to *Abraham, Lot, and others*, had visible Bodies, which no doubt they assum'd, the better to be seen, heard, and understood in a more familiar Way with Man, who notwithstanding in their proper Natures were Immaterial Beings, and kept no longer those gross Assumptions than they were useful for what they came about into the World, viz. To converse with Men.

Q. How do Spirits speak, - seeing 'tis held they have not Organical Parts, like us who have Bodies, neither are they fram'd of Membranes, Bones &c.?

A. When they speak to us they assume a Voice by beating on the Air, and so frame Sounds, as to be understood of us in any Language they shall please, from a Wise and Innate Knowledge center'd in 'em by a virtual Power, having a virtual motive Faculty over Bodies, to move 'em without Hand or Touch ; as we hear an Eccho can reverberate a Voice, and answer distinctly, when the Air is repercussed or beaten by the motion of that which presses it, though it is in itself but the Image of a Voice ; so Spirits, tho they have not Lungs or other Organs, have at least the Air at command, on which all Sounds are impress'd, and without which no Voice or Sound could be convey'd to the Organs of Hearing, &c.

Q. Do the Spirits of dead Men assume their Habit and Likeness when they appear? And are they of the same Size and Bigness in the Body as in their Life-time?

A. They have frequently been related to appear in the very Likeness, Habit, and Proportion, as the living Party ; and some to whom they have appear'd, not knowing the Parties to be dead, have Complimented them, and familiarly Discours'd

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separ'd with 'em, as they us'd to do when alive; but coming to shake Hands, they could have no Touch, and often (to their affrightment) they have vanish'd like Smoak or a Shadow, by immediately dissolving the assum'd or borrow'd Shape into its native thin Air; for none can believe that a Soul departed in itself has the Likeness of the Body, for then it might be as well seen at departing from the Body, which no sensible Person can affirm to have seen.

Virgil (by the way) tells us, that when *Creusa*, *Eneas's* Wife, lost in the Ruins of *Troy*, appear'd to him after her Death, her Ghost assum'd a larger Shape. But to confine a Spiritual Substance to bigness or smallness, cannot but seem absurd; and, to baffle this, some of the Ancients have written, that a Thousand Spirits may dance on a Needle's Point.

Q. Why do Ghosts or Spirits only (or for the most part) appear under the shelter of the Night, or haunt People, as they call it?

A. Because they can (as it is held) then best assume their shady Bodies to form Shapes, which being yet but thin Air, by the Light would not only be penetrated, but the heat of the Sun would be apt to dissolve the Vapour, unless a Supernatural Power restrain'd it; as in the Case of the Angels spoken of, who appear'd in the Day-time.

And moreover, if they be Evil or Banish'd Spirits, that have their Portion in Misery, after a Separation from the Body, it may be conjectur'd they more delight in Darkness and Solitude, suitable to their deplorable Condition, as ashamed to be generally expos'd to the clear Light.

But notwithstanding what has been said, these

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Apparitions, that many have avow'd to see, proceed sometimes from Fear, or a frightful Nature, at other times from a Conscious Guilt, and often from a melancholy Fancy, and the force of Imagination representing Idea's that really are not present; and many times their Fears make them apprehend Sounds and Voices, when no such thing proceeds either from a Spirit, or from any manner of Sound.

Of divers other Matters, by way of Problem.

Q. *What is the Cause of that clinking Noise in Rooms, like the going of a Watch; commonly call'd the Death-watch, so frightful to many, and so ominous?*

A. This Experience has shewn us to be no more than an old Spider on a Wall, either eating its way to make an obscure Abode, or making that Noise with her Legs and Mouth.

The like Noise is often made by a Grub or Worm, eating into a hard Wainscot, or other Board or Bed's-post; and sometimes there are many of these Noises at a time in the Chamber, but they are nothing ominous; for if any one in a Family die upon this, 'tis no more than would have happen'd if no such thing had been.

Q. *What is the Reason some Persons walk in their Sleep, and do strange Actions, seeing 'tis usually taken for the resting of those Spirits that could cause such Motion?*

A. This happens when the Fancy, that never sleeps totally, is over-busie and active, or the Imagination sticking upon things desirable when waking, agitates the Spirits of the sleeping Party, so rise (even in drowsiness) and pursue them;

upon which account many strange Actions have been done in Sleep, as the walking over narrow Bridges without falling, swimming in the Water till the Cold has wak'd them, opening Bolts, Locks and Bars, and shutting 'em again, walking into the Fields or Streets, and returning to Bed again fast asleep.

These wonderful Effects has made some conclude, that these Sleep-walkers are actuated by some good or evil Spirit, which get into the Body as into a Ship whose Pilot is asleep, and guides it at pleasure, carrying it out, and returning to the same Port again; for indeed some People, in their Sleep, have been known to do those things which waking they could not perform.

Q. How come Thoughts first into the Minds of Men and Women?

A. Thought came not into the Mind from without, but at one and the same time we suppose a Mind, we suppose Thought; for whether we make the Essence of Spirit or Mind to consist in Activity or Cogitability, if we may have leave to coin the word, 'twill recur to much the same thing: If Mind is a knowing, thinking, or acting Substance, at the same time it thinks or acts there is Thought, which is nothing more than the Action of the Mind, and it must exert whenever it has actual Existence.

Q. What is Motion?

A. 'Tis an actuating Power given to Bodies, as Air, Water, Fire, and to all Creatures one degree or other; 'tis akin to Time, and those other Beings (if any such there be) that are in a perpetual flux; and if we consider whole Time or perfect Motion, they seem no other than Beings of Reason, because what they are they may be thought to owe to our Conception.

Of the-Motion and Harmony of the Celestial Bodies, the Tropicks, Poles of the World, and other Matters.

Q. *What are the Causes of the Motion of Celestial Bodies, seeing they move in such Harmony and Order, without Change or Alteration ?*

A. First, We must ascribe it to the wonderful Power and Wisdom of GOD, who in the Creation set them Laws and Bounds that they should not exceed in their motion. Secondly, As to Natural Causes, the Spheres are carried about with incredible swiftness by the first great Circle or prime Mover, as the lesser Wheels are carried about by the motion of the greater Wheel in a Clock or Watch ; and this is call'd the Ninth Sphere, those beneath it containing the Stars and Planets in their Order.

Q. *Of what Substance do the Ancients hold the Celestial Bodies to be ?*

A. There have been various Opinions about this, but *Aristotle*, and some others of the wiser sort, conclude they are compos'd of Matter, or else they could not be visible, but that it is purg'd and refin'd from its Grossness, which earthy Substances are not, which renders them more lucid : And this they term the Fifth Essence, of a more rare and different Substance from that which we term Elementary, and that is impregnated by Heat, which is inseparable from Brightness, the Similitude and Semblance of Light having the Substance of that and Heat so annex'd with it self, that it is almost nothing else ; so that the Light, Brightness, and Heat may be taken for the same thing ; the Substance and Matter of the Spheres.

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Spheres, and all Cœlestial Bodies, have this for their Composition in the greatest Measure.

Q. What are the Poles of the World, so call'd?

A. They are call'd *Arctick* and *Antarctick*, North and South Poles, but are no other than a certain number of Stars making a Circle in a manner, turning only round, never rising nor setting as the Planets and other Stars do, from whence they derive the Names of *Poles*, as if they were the Centre of the Spheres on which they turn, and by an imaginary Magnetic Vertue sustain the ponderous Earth and Sea, surrounded with the fluid Air and the Spheres, tho' the Earth indeed it self, we find, is center'd upon its own Basis or Centre; so that (if it were possible) a Passage could be dug thro', and never so great a mass of Iron thrown down (though by its mighty weight it at first plung'd beyond the Centre) yet would it rise again to the Centre, and there hang in the Air center'd, as the Earth does.

Q. What are the Tropicks and Signs?

A. They are call'd *Cancer* and *Capricorn*, the Northern and Southern Tropicks, or Summer and Winter Solstices, because they are the Sun's Boundaries in its Retrogression and Egression, beyond which he never goes Summer nor Winter: And between these are plac'd the Twelve Signs of the *Zodiac*, in which are imaginary Circles, the Signs being made by Stars clustering together, in the form of a Ram, Bull, &c. by which the fanciful Ancients have nam'd 'em.

Q. What are the Æquinoctial and Meridian Lines?

A. The first is an imaginary Circle, cutting the Earth (as we may say) into equal Parts, and has

its Name from making equal Day and Night in all Parts of the World when the Sun is upon it. As for *Meridians*, they are innumerable ; for where-ever the Sun is exactly Southward, that is a *Meridian* to those on the North-side, of what Country soever they be ; and the like to them that are on the South-side when 'tis so Northward.

Q. What is that we call the Hemisphere ?

A. Only so much of the Heavens as we can see above the Earth standing on any place ; or a Semi or Half-Sphere, or Prospect of the Heavens. It is also call'd the *Horizon*, the other Part being depress'd (as we may term it) under the Earth, or shadow'd from our Sight, as the Sun is when we say it sets.

Of Wonders in Nature, viz. The Causes of Blazing-Stars, and how they do prognosticate Lightning, Thunder, &c. Many Suns and Moons appearing at once ; Eclipses, and when they will happen. Of the Rainbow, Armies, and strange Sight in the Air, as fiery Dragons, Pyramids, and other fiery Impressions.

Q. Seeing there are many wonderful Things in Nature that the Philosophers call Second Causes, and have taken much Pains to write largely on, especially Aristotle, let us consider them in order ; and first, What is a Comet ?

A. A Comet or Blazing-Star, that often appears so terrible, even frightening Nations with Apprehensions of approaching Judgments, is only compos'd of hot and dry Exhalations arising by degrees from the Earth and Sea, carrying with it Unctuous Vapours, and amassing or embodying

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in the upper Region of Air, where approaching too near the Region of Fire, 'tis by a vehement Agitation in contending Elements (or some other Accident) enflam'd and set on fire, the Body in the Night, when the light of the Sun is not upon it, appearing like a Star; and the Blaze, which burns upward, seems like a fiery Tail, or a long fiery Train.

X Q. *How is its Motion or Continuance?*

A. It moves infinitely beneath the Starry Region by the motion of the Air, as we see the *Ignis fatuus* does near the Earth, and continues to burn till its Matter is consum'd, and so vanishes.

X Q. *What is the usual time of its Generation?*

A. Commonly in Harvest or Autumn, for in the Spring there is too much moisture, and in the Summer too much Heat, one hindring its rising, and the other consuming and dispersing its matter when it does rise, that it cannot get together in any quantity; and in Winter the cold and moisture, contrary to the Nature of a Comet, stiffly opposes it.

X Q. *How is it held to forerun Droughts, Barrenness of the Earth, Pestilence, and hot Diseases?*

A. (1.) Because the Comet cannot be consumed without great Heat; and much moisture is consum'd in the burning of it, so that it dries the Air that should densate into Rain, and hinders any from falling in due season.

(2.) It draws the Fatness and Oily Spirit out in such abundance, to furnish and feed it during its mighty combustion, that till the Earth can recruit again by the assistance of the Air and Mineral Heats, it must of necessity remain sterile and barren in those Regions of the World where the Co-

met had its greatest Nourishment; for tho' by reason of its height it seems but small to us, yet 'tis a vast Body, perhaps larger than some considerable Islands.

(3.) It causes Pestilence, Fevers, and other hot Diseases, by inflaming and corrupting the Air, which drawn in, infects the Bodies of Men and Beasts with a poysonous Vapour causing those Maladies.

Q. What are the natural Causes of Thunder and Lightning?

A. This is also a hot Exhalation arising in little Particles of Fire, which embodying in the Air above the Region of the Clouds, meets the cold Region, and its Fire being gross, and unable by force to break thro' or join the Region of Fire, as the more purer Fires do, it rebounds with a precipitate Violence toward the Earth; and if in the way it meets with an Opposition of Watery Clouds, it forces its way thro' with a terrible noise and rumbling, and is the louder by reason of the Sound the hollowness of the Air in so vast a Cavity gives it. If it meets with no Opposition, it only flashes, and expires without Noise.

Q. Why is the Lightning seen so long before the Thunder is heard?

A. This thing is plain, by comparing it with many others; as when a Man is lopping a Tree, or a Gun is fired at a distance, we see the Stroke some time before 'tis given, as also the Flash before the Report; for a Sound must come thro' the various windings of the Air to our Ears, that are local, whereas the Eye can reach an Object on a sudden, tho' at a great distance: And therefore, tho' the Lightning and Thunder are at one

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Instant, yet the vast distance makes one to be discern'd before the other is heard.

Q. Some have asserted, (but how truly do you determine from the Writings of the Wise Philosophers) That when it Thunders, a Stone or Thunderbolt falls about a foot long, and pointed at the ends.

A. This is a vulgar Mistake, for there is not (nor ever was) such a thing as they term a Thunderbolt: That which does the visible Harm, (as rending Trees, killing Cattle and Men, ruining Houses, and sometimes setting fire to combustible Matter) is apparently no other than a gross Body of Sulphureous Fire, sometimes long, and at other times scattering a little, and often in the form of a Globe, that breaking thro' a Cloud more forcibly than a Bullet out of a Piece of Ordnance, and not spending its Fire in the Air, reaches to the Earth, and then sticking on any solid Body which gives a check to its Force, (as despising any Opposition) the Fire penetrates with so swift a Motion that nothing can resist its Force: Oaks (that are stubborn) it rends; Willows (whose Pores are more open) it passes through, and only blasts or withers 'em, by drying up the Sap: Living Bodies it kills, by drinking up or poisoning the Vital Blood, without breaking the Skin, only leaving some Spots or Marks upon it, which (if it were a Stone) it would rend and tear as well as it does hard Bodies, where it cannot so easily penetrate.

Many write, that it has melted Money in a Purse, and the Purse has remain'd whole; Blades of Swords in their Scabbards, and the Scabbards unsing'd; with many other wonderful and strange Effects, too many here to enumerate.

Q. How comes it that two or three (and sometimes more) Suns have appear'd at once, as also as many Moons ?

A. There never was more than one real Sun, the others were but the Image of the true one, whose Beams refracting in watery Clouds, there impress the Sun's Figure, as in Water or a Glass Mirrour, which shine bright for a time, and then by degrees vanish quite away. And the same 'tis with the Moon ; for those several Moons are but the Image of the true one impress'd in watery Clouds.

Q. What are these Phænomena's held to signify ?

A. Most commonly great Rains and Tempests ensue, because they cannot appear but in a watry disposition of the Air, and most frequently when these Planets are in watry Signs.

It is also held, that if they appear on the South-side of the Sun or Moon, they are Fore-runners of greater Storms and Showers than if on the North-side, by reason the hot Southern Vapours are dissolv'd quicker into Water than the cold Northern ones.

Q. What is the natural Cause of the Rainbow, and its various Colours ?

A. The Rainbow is the Apparition of certain Colours, impress'd by the Sun-beams in a Cloud opposite to it, making a Half-Circle resembling the Hemisphere ; for the Sun reflecting on a Cloud at a distance from it side-ways, its refracted Beams shew the various Colours of the Exhalation the Cloud is compos'd of. The blue Colour is that of the Air or Cloud ; the red, of the Sun ; the others are mixt.

Q. What does the Appearance of the Rainbow signify as to Weather ?

A.

A. Very considerable; for from that quarter where first the Rainbow begins to break or with Wind will arise and bring up Showres. If the Rainbow vanishes at once as 'twere, fair Weather ensues. If it breaks into many parts, tempestuous Winds are gathering in the Air. If when (or after) it appears bright the Colours grow gross and dark the Air is very much dens'd, and great Rains are gathering, which will soon descend to the Earth.

Q. What is the natural Cause of those Apparitions resembling Armies fighting in the Air, Ships as on the Sea, Castles, Fields, Woods, Mountain monstrous Forms, and the like, that have often been seen, and have much terrified ignorant People?

A. These are only Exhalations drawn sometimes to the lowest, and sometimes to the highest Region of Air, on which the Light of the Sun or Moon reflecting, as they happen by Night or Day gives them a Light, sometimes making 'em appear like Fire, Blood, Water, Earth, or other various colours, (not that in themselves they are really) and thus the darker Shadows setting those Clouds out in Figures, make them appear terrible to the Spectator's Eye, especially in the Night, when sticking upon the Imagination, makes him fancy Shapes and Forms imprest in the Clouds according to the Mind; and the rather, because in bad weather these Vapours are mixt with much heat and flash with Lightning, which murmurs in a grosser Air, and seems as if Armies were engaged, Guns going off, &c. Moreover, when the Air is calm below, it moves very much in the upper Region, agitating those Phantoms, and making them seem to rush together, some seeming to move one way, some another, as higher or lower one above another.

Q. What

Q. What is that (call'd the Fiery Dragon, or Drake) which makes such a terrible Impression on the Air?

A. This fiery Impression happens when a certain quantity of Vapours are gather'd on a heap, being very near compact and hard-temper'd together. This lump of Vapours ascending to the Region of Cold, is forcibly beaten back, when moving downwards with Violence, it kindles by agitation, and so the higher part that was climbing up being more subtle and thin than the rest, appearing like a Dragon's Neck smoaking, for that it was bow'd in the late repulse, or made crooked, to represent the Dragon's Belly. The last part by the same repulse being turn'd upward maketh the Tail appear, as being smaller, or appearing so thro' its Remoteness, and also because the Cold binderh it: And being thus form'd, it moves very swiftly, and often meeting with a cold Cloud to turn it back, moves afterwards in whirling Circles, till being burnt out, it vanisheth.

Q. What are those fiery Impressions call'd Pyramids, or Pillars of Fire like Steeples?

A. These are Impressions of the Nature of the foregoing, but that it fires as it ascends to the higher Region of Air, and the Exhalation having much earthy Matter in it, the thinner Part rises Pyramidically with a sharp Spire, whilst the grosser spreads broader, as lagging behind, and not able to mount so fast. And of these kinds are all fiery Impressions kindling in the Air, as burning Stubble, or Sparkles of Fire, dancing Goats, Torches, &c. shooting or falling Stars, so call'd by the Ignorant, burning Candles, burning Beams, round Pillars, burning Spears, burning Lamps, Shields

Shields, Globes, or Bowls, and the like, being only hot and moist Vapours kindled in the Air, which, according to its Motion, of their violent Repercussion, gives them several Forms resembling Things on Earth.

Of Lights that go before Men, Castor and Pollux, Flames upon Mens Beards and Hairs, Circles about both the Sun and Moon, &c.

Q. *What are those Lights that go before Men, and often lead 'em astray in the Night, their Cause?*

A. This by the *Latins* is call'd *Ignis Fatuus*, and by the *Vulgar* amongst us, *Will with a Wisp*, or *Jack-a-Lanthorn*: It is an Exhalation kindled by a violent Motion very low and near the Earth, moving to or from you, as the motion of the Air is, or as your Body presses it. These arise chiefly out of fat moorish Grounds, Church-yards, and the like; and divers People holding the Tradition of Popish Times (tho' ignorantly) that it is a Spirit: Fear surprizing them, they follow it till they have wander'd out of their Way, and being once out, cannot get in again, and so many times fall into Pits, Ponds, or Lakes; many have been lost by this means, which had they retain'd a stedfastness of Mind, it could have done 'em no manner of harm.

Q. *What are those Lights at Sea, call'd Castor and Pollux, that appear to Sailors, sometimes single, and sometimes together? And how do they presage Storms or Calms?*

A. This is of the same Substance with the 'foregoing, only more blue, because it rises from the salt and thinner Exhalation of the Sea, which by

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agitation is set on fire. These Impressions will often cleave to the Masts and Tackle of Ships, divide and then unite again, skipping sometimes from one Ship to another, if they be near, as the Air moves or draws 'em: Sometimes they appear single, and at other times together; and when but one appears, a Tempest is threaten'd; but if both, it promises a Calm, or very favourable Weather. As for the Reasons of this, 'tis probable that one Flame may give Warning of a Tempest, because as the Matter thereof is compact, and not dissolved, so it is likely that the Matter of the Tempest (which never wanteth Wind and Clouds) is still together, and not dissipated; and if a Storm threatens suddenly to arise, by two Flames appearing together, it is to be consider'd, that the Exhalation (which is very thick) is divided, insomuch that the thick Matter of the Tempest is dissolv'd and scatter'd abroad by the same Cause that divides the Flame, and so consequently a Calm, or fair Weather ensues.

Q. What are those Flames that appear on the Hair of Men or Beasts?

A. These are sometimes clammy Exhalations, scatter'd abroad in the Air in small Particles, which in the Night, by the resistance of the Cold, are kindled, and by their clamminess cleave to the Hair of Men and Beasts that are late abroad, but do not burn, as being rather a light than a Fire: And sometimes these are caus'd by the chafing Heat or Sweat proceeding from the Bodies of Men or Beasts, which producing an unctuous Steam or Vapour, kindle into a harmless Flame.

Q. Why are there often Circles about the Sun and Moon?

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A. These

A. These are caus'd by the Impression of their Beams in gross and thick Air, which by Refraction cause the Circles.

The Cause of Earthquakes, Winds, the Milky-way, &c.

X Q. What is the Cause the Wind takes Fire, and thence is call'd the Fiery Whirlwind?

A. It is compos'd of a moist hot Vapour, which embodying with thick and cold Clouds, struggles to disentangle it self, and by a forcible Agitation is there set on Fire, flying in a fiery Circle, turning and overthrowing all things that oppose it, differing from other *Whirlwinds* in nothing, as to the Cause, but that it is set on Fire.

X Q. What is the Cause of Earthquakes, and the rending of the Earth?

A. In the Earth are many great Caverns, into which the subterraneous Air gathers in a vast quantity, and when that struggles with the Heat and moist Vapours, it swells and encreases to such a fulness, that the Caverns being no longer able to contain it, it struggles forcibly to get out, and by that Violence lifts up the Earth, and causes it to shake and tremble, whilst it forces its Passage thro' the Crannies or Pores of it, to enlarge itself; and sometimes rends the Earth, and leaves wide gapings when Obstructions is great, either by too much moisture, or too much dryness, making a Noise like the roaring of Bulls: And sometimes it has two Motions, like the rushing together of Rams when they butt; and this is caus'd when the Air forces its way out of two distant Caverns. This oftentimes proves very ruinous to People, Cattle, Cities, Towns, and Villages, many time swallowing 'em in the wide gaping *Chasms*.

Q. What

Q. What is the Reason People are often render'd incapable of flight in the first shocks of the Earthquake, when by it many might save themselves from being overwhelm'd and buried in the Ruins of their Houses ?

A. Sometimes this happens thro' Fear, occasion'd by a sudden Surprise, which chills their Blood, and for a time makes 'em as it were senseless; but chiefly the Cause is from the sulphureous Mineral Vapours arising with gross Air, and sticking upon the Brain, insomuch that it causeth Dizziness, and a sudden swimming of the Head, which for a time hinders Motion; and where they are very strong, they in a manner suffocate, so that People fall down utterly unable to help themselves.

Q. What are the Signs forerunning an Earthquake ?

A. The tossing of the Sea when there is little Wind stirring; for under it (as nearest the Vapours) it first begins to get vent, and boils up the Waters in forcing thro' them.

A hollow murmuring or rumbling in the Earth also a corruption of the deep Wells.

The Sun's appearing dimn some Days before because the Wind that should have purg'd the gross Air, which makes it seem dimn to our Sight is drawn into the Earth; with many other Signs observ'd by the Ancients.

Q. What is the Wind that blusters so, and whose Force we feel with such Violence, tho' we cannot ordinarily see it ?

A. It is Air, or the moist and hot breathing of the Earth and Sea, drawn up by the Influence of the Sun, or rather steam'd up by the Fires that

are in the Earth ; and their Motion is more or less, as they are agitated by the Repercussion of Hills, Mountains, or steep Places of the Earth, that oppose their free Passage : Or sometimes when a vast Body of Air has been shut up in a hollow Cloud, and forcibly breaking out, beats directly on the Earth. And from this last Cause proceed *Whirlwinds*, and most violent Storms, both at Sea and Land.

X Q. *Can one's Eye perceive the Wind, as well as it sensibly feels it ?*

A. Yes, in a cloudy Day 'tis easily discern'd to the Sight ; for if you lay your Eyes pretty even with the tops of well-grown standing Corn or Grass, opposite to the Quarter whence the Wind blows, you may perceive black Clouds to come blowing along like Billows ; And this is caused by its bending the Corn or Grass, whose opposition thrusts it back in its Motion, so that it grows so thick and gross that it may be seen. The like Experiment is, when a Cannon-Ball flies we perceive it encircled with a blue gross Air like a little Cloud, which the swiftness of its motion presseth together, by its flying at that time swifter than the Wind or Air moves ; and it is more eminent if it be shot against the Wind.

Q. *What is the reason that in a clear Air, in the Night-time, we see part of the Starry Region lighter than others, in a long Track, call'd the Galix, or Milky-way.*

A. It proceeds from a great number of little Stars as it were clustering together between the Signs of *Sagittarius* and *Gemini*, and is of a vast Extent, for towards the North it passes over the Ecliptick Line of the ninth Sphere, to the eighteenth

teenth Degree of *Gemini*, and so to the second degree of *Cancer*, which is thirteen degrees; and towards the South, from the eighth degree of *Sagittarius* to the thirteenth degree of that Sign: And because 'tis there divided into two Branches, it reaches from the twenty-fourth degree of *Sagittarius* to the second degree of *Capricorn*.

The Cause of Clouds, Natural and Prodigious Rains, Dews, Hoar-Frosts, Circles in the Heavens, Salt-ness of the Sea, its Ebbing and Flowing, Rising of Springs, hot Baths, Generation of Metals, &c.

Q. *What are the Substance of the Clouds that are so visible to us?*

A. They are cold and moist Vapours drawn out of the Earth and Waters by the Impression of the Sunbeams into the middle Region of Air, where by Cold they are so knit together, that being bore up by the under Air, and drawn by the upper, they hang between both, and are subject to the motion of the Air or Wind, till growing gross and thick, their own weight dissolves 'em, the thinner part to Air, the moister and heavier to Water; and if dens'd by an extream Coldness, they become the Production of Hail or Snow; tho' there are a sort of Clouds that produce neither, and thence are call'd empty Clouds, which only dissolve into Air.

Q. *How are Mists generated? And of what Nature are they?*

A. They are of two kinds, one ascending, and the other descending.

That which ascendeth goeth out of the Earth and Water like Smoak, and spreads only over some Parts; but that which descendeth is, when

a Vapour is lifted up into the Air by the Heat of the Sun, which not having Strength enough to draw it so high, that the Cloud may dense it into a Cloud, it only thickens a little, and falling down again covers the Earth with gross Vapours, and is usually a Sign of fair Weather.

Q. What is the Cause of Rain?

A. The dissolving of a watery Cloud so heavy that the Air can no longer bear it, and straining through the Air, it divides it into Streams or Drops, as Water is when pour'd through a Sieve, or through the Nose of a Watering-pot, being originally generated of moist Vapours arising from the Earth and Sea.

Q. Why is not Rain-water salt, seeing (chiefly) it proceeds from the Sea, which is so?

A. Because it is drawn up in such small Vapours, that the Salt, which is the heaviest, is left behind, and what blackishness arises is purified by the Sunbeams; so that being as it were an Alembick by Nature, it is more wholesom and pleasant than any other Water.

Q. What is the Cause of monstrous and prodigious Rains, out of the ordinary Course of Nature, as raining Spiders, Fish, Flesh, Frogs, Milk, Blood, Wheat, Wool, Brickbats, Iron, Quicksilver, and the like, which History makes mention to have been many?

A. The Vapours that are drawn up into the Air are mix'd of several Qualities, carrying with them a certain kind of that Seed or Putrefaction that generates such Creatures and Things by the help of Heat and Moisture, which having time to continue, are form'd in the Clouds as in a Bed of Nature, though not so usual a one: As we see Bees, and other Insects are suddenly (of

certain Dews) brought by the Wind, and left on the Branches and Leaves of Trees, Herbs, &c.

As for Stone, Brick, Iron, or Chalk, which many Historians affirm to have fallen from the Clouds, it must be concluded the Exhalation was gross and earthy, which gathering and uniting in the upper Region among hot and fiery Clouds, might be so form'd.

Q. Of what Nature are the Halions or Circles about the Sun and Moon? And what their Signification as to the Weather, or the Alteration of the Air?

A. These are only the Impression of the Beams of those Luminaries refracting in a thicken'd Air, for the like we may see in damp Weather about the Flame of a Candle: Yet this necessary Observation is to be made, That the Wind will arise from that Quarter where the Circle first begins to break: the Cause of this is, that the Circle is broke by the Wind that is above in the Air, which as yet reaches not the Earth, but suddenly will.

Q. What is the Reason Dews ascend and descend in the Night?

A. This is only a Vapour, which in Spring and Autumn (and often in the Heat of Summer) is drawn up by the Sun in the Day-time, which by reason of its hasty Production is carried no higher than the lower Region of Air, being staid there by the Cold of the Night, and condens'd into Water, and so falls down, as if it distill'd in small drops.

Q. Is there no more than one sort of Dew?

A. Yes, it is of two sorts, viz. that which is the watry or common Dew, and the sweet Dew; the first is common to all Places, the latter comes

in large quantities, but is confin'd to particular Countries, as *Arabia, Persia, Ethiopia, India, &c.* and this falling on certain Trees and Herbs, is hardned by the heat of the Sun when it rises, and grows hot, so that it is gather'd, and call'd *Manna* from the Hebrew word *Mahu*; for when the Children of *Israel* saw it first lie thick about their Tents in the *Arabian* Desert or Wilderness, they cry'd *Mahu*, which signifies White, because this Dew condens'd is so.

There is likewise a sweet Dew falls in *England* call'd *Mildew* and *Honey-Dew*, well known to Bees, who store their Hives with it; these are drawn from Flowers, Herbs, Trees, Plants, and the Sweat of the Earth, which raise their Odours into the Air by gentle breathings, and mixing with moisture, descend again.

There is moreover a bitter blasting Dew arises from the sulphureous Minerals of the Earth, which when the moisture is drawn from it, lies like Meal or Bran on Herbs and Trees, and often kills 'em.

Q. How is the Hoar-Frost engender'd?

A. It is no more than a Dew at first, rais'd when the South and East Winds blow, but then changing to North or North-East, the Vapour is frozen by the Cold, and so lies white upon the Grass, Trees, &c.

Q. How is Hail engender'd in the Air?

A. This is engender'd of a hot Vapour rising to the middle Region of the Air, where being encircled with Cold, it is frozen, and pressing on the Air with its weight, falls to the Earth, is broken into pieces of various shapes, but chiefly round.

Q. How is Snow engender'd, and becomes white?

A. It is engender'd as Hail, but the Vapour being

ing thinner, it spreads itself, and being congeal'd by extream Cold before it is perfectly resolv'd from the Vapour into Water, takes its whiteness from the Light that strikes into it, and so being frozen in a large spreading Cloud, it presses on the under Air, which shivers it into flakes or small pieces in its fall to the Earth.

Q. Why is Sea-water salt, seeing Springs that come from it at any distance are fresh?

A. Aristotle tells us, that the Sun draws from it the thin Vapour, which carries with it the Sweetness, to make Rain for the nourishment of the Earth, and so the grosser parts remaining are salt or bitter: And moreover, that great mass of Water, by G O D's appointment in the Creation, fill'd the Valeys of the Earth, in their nature salt and barren, from whence the Water attracts its Saltness.

Q. What's the Cause of the ebbing and flowing of the Sea?

A. Aristotle tells us, 'tis caus'd by Exhalations of the Earth under the Water, which bubbling or boiling up, drive it to and fro, according to the contrary Bounds and Limits, as upwards and downwards, wide and narrow, deep and shallow.

Others ascribe the Cause of its ebbing and flowing to the Course of the Moon, which is very demonstrable, for we find that Planet rules over Moisture as the Sun does over Heat, for from the New Moon to the Full all Humours encrease. Also the very time of the ebbing and flowing of the Sea may be known by the Course of the Moon; for when she rises in the East, the Ocean seems to follow her Motion, and flow till she passes the *Meridian*, and inclines to the

South-West, then it ebbs again, and so till she sets; then it begins to flow again when she is under the Earth, till she passeth the *Meridian* there. And this Demonstration is so apparent, that none of the latter Ages have contradicted it, or given us a better Reason for it.

Q. What is the Cause that Springs arise out of the Earth, seeing Nature is of it self dry, often gaping wide Chasmas for want of Moisture to cement it?

A. However it may otherwise appear, yet in the Earth there are many hollow Gutters and Veins, in which always is a moist Air, that resolves it self into a Water, which pressing on by reason of the streightness of its Bounds, works its way out. And the Cause why such Springs flow continually, is, because the Air can never be wanting in those Veins, which by Cold is always turn'd into Water, so that as fast as the Water runs forth, so fast is the Air again receiv'd into its Place to make a Supply: And where a Spring is dry'd up, its Source is not deep in the Earth, and so the excessive Heat may dry in the Air, and hinder its Supply.

Q. What is the Cause of hot Waters flowing out of the Earth, commonly call'd Hot Baths?

A. The Water is heated in its Passage, either by hot Mineral Vapours that mingle with it, or running near to subterraneous Fires deep in the Earth, whose sulphureous Heats giveth both warmth and tincture, for these Waters generally change the Colour of Metals, and the Skins of those who often bathe in them, as appears by such as are Helpers or Guides in Baths, whose Skins, by often going in, look like *Indians*,

yellow and tawny, caus'd by the sulphureous quality of the Water.

Q. How are Metals generated in the Earth?

A. By Spume, Heat and Moisture; as Sulphur and Quicksilver; the first is call'd the Father of Metals, because it is hot; and the other the Mother, because it is cold and moist; and of these all Metals are generated.

Q. Why are not other Metal: so fine as Gold seeing they have all one Original?

A. The Alchymists agree with the Philosophers in this, that Nature always intends for the best, and in her working labours to that end, as designing all Metals to be of the fineness of Gold, but being hinder'd for want of good Mixture, or good Concoction, she bringeth forth other Metals, tho' not so valuable, yet more useful to Man in Service than Gold.

Q. Why is it that Gold neither rusteth nor corrupteth, and (if pure) wasteth not in the Fire, tho' never so often melted?

A. Because it is pure, as purg'd by the working of Nature from poisonous Infection, or any thing that may tarnish or putrifie its entire Substance, so that it being most solid, receiveth not the Air into it,, which is the chief Cause of Corruption where it gets entrance. It is also perfectly concocted with sufficient Heat and Mixture of Sulphur, when all other Metals are not quite so well concocted, or else they have not the due quantity of Sulphur in them, and there being no Dross in pure Gold to waste, the Fire cannot lessen it.

The Signs of all sorts of Weather, as Rain, fair Weather, Winds, Hail, Snow, and Frosts.

Q Seeing to know what Weather will happen at all times has been the Search or Study of the wisest Philosophers of all Ages, and Aristotle particularly has taken great Pains to make this Science plain, let us gather from him and others what are the Signs or Prognosticks of the several sorts of Weather; and first, of Rains and drizzling lowering Weather?

A. Mark for this the density or rarefaction of the Air, which if gross, the Sun will shew it at its rising, by looking broader than usual, its Beams being diffused and spread in those thick Particles of Air which hinder their darting directly forward, and shews there are strong Vapours gathering from the Sea, that (like *Elijah's* small Cloud) rising out of it, will soon thicken into Rain, and overspread the Hemisphere.

The Sun's setting in a black Cloud, and dispersing its Beams, partly to North, and partly to South, signifies a rainy Night, or Showers the following Day.

The often shifting of the Winds prognosticate sudden Rains.

The Moon's Horns appearing blunt three Days after the Change, prognosticates wet Weather for that Quarter, but the rest very seasonable.

Many small Clouds in the Evening arising at South-west, foretel Rain is gathering, and will suddenly fall in great Showers, or drizzle.

Y Q. What Signs of Rain have you from the Observation of the Creatures?

A. The Ancients have laid a great Stress upon

them as to the Weather, which has more immediate influence on their Bodies than it has on those of Men, and being of a strong Scent, they can better scent the Air, and distinguish to what Weather it inclines. As for Example :

When the *Heron* or *Bitron* flies low, it denotes Rain.

When Cattle view the Skies, and snuff up the Air, feeding hastily, it is thick and gross, inclining to Rain.

The much croaking of Frogs, chartering of Swallows, the Ants removing their Eggs, the Crows walking by Ponds or Rivers, and dipping himself often, or Crows flocking together, holding their Heads up in their flight, and making a greater Noise than usual, and the often dopping or diving of Water-fowl, are all Signs of Rain.

Q. What Prognosticks had the Ancients of the rising of Winds and Storms ?

A. They had very many from the Elements, Planets, and Creatures, as the blushing of the Moon, the Sun's rising pale and seeming to have Spots in her Orbs, Meteors shooting thro' the Air with long blazing Tracks of Light, all signify Wind or Storms engendring, and suddenly to rise.

Q. What Signs are there from the Creatures of lower degree ?

A. Very many ; as when there is a Murmuring heard in Woods, the Air being otherwise still.

Cormorants and other Sea-fowl hastily flocking to the Shore, and often crying.

Cattle hasting to shelter, the Heron flying very high, a kind of murmuring of Thunder from the North ; or if in a lighted Lamp the Oyl sparkles and purls, the VVick growing hard, and the Light burning dimly.

150 *New and useful Problems.*

X Q. How or what are the Signs of fair Weather?

A. The Moon at four Days old having her Horns sharp and bright, predicts fair Weather till the Full, if not to the Month's end.

The clear shining of the Stars, and their seeming to dart Beams to the Earth.

Little Clouds sinking low into the Vallies at South-east and South-west.

The Sun rising in the Morning clear and bright and setting at Night blushing, without Spots or black Clouds near it.

X Q. What are the Prognosticks from things of a lower degree, and from the Creatures?

A. Mists or Smoakings on the Surface of the Water, the Rainbow appearing after a Showre, and the blue and yellow Colours of it very bright to what is usual at other times.

Fish often rising and bubbling on the top of the Water, Cattle feeding and seldom looking up, a scattering of Clouds like Fleeces of Wool, to the North-west, Sea-fowl leaving the Shore and flocking to the Sea, Spiders weaving their Webs on Grass and Trees, and long Streaks of Webs flying in the Air, much Dew on Sheeps-Wool in the Morning, and Bees coming home late to their Hive.

X Q. What are the Signs of very hot Weather?

A. Hasty Showers falling, and allaying the Wind, little Strings like Cobwebs flying in the Air in a Morning, -glittering of the Grass at Sun-rising, as if Snails had crawl'd there, the smoaking of standing Waters, and Mists in low moorish Places, also swarms of Gnats and Flies late abroad in the Evening, Frogs coming out of the Water and croaking on the Banks, Plover or Lapwings flying first

high and then low, with almost continual Cries.

Q. What are the Signs of very cold Weather, or a hard Winter?

A. The Sun's setting in Mists, and looking broader than usual, cold Dews and Morning Rymes in Autumn, the clearness of the Stars, and their much twinkling, Birds us'd to the Northern, hastening in Flocks to the Southern Climate, as Stares, Feltrofers, Woodcocks, &c. Swallows going away sooner than usual, Birds laying up their Winter-Stores in Nests and hollow Trees very early, the Sea-pyes leaving the Salt-water, and flocking about Rivers and Lakes, the much hooting of the Owl in the Night, and *Will-with-a-Wisp*, or *Ignis Fatuus*, appearing more usual in moorish Ground denotes cold Weather.

Q. What are the Prognosticks of frosty Weather?

A. The dryness of the Air by cold Eastern or Northern Winds, much glimmering or twinkling of the Stars, shining brighter than usual, the Wind often shifting in the Northern and Eastern Corners after the Change of the Moon, the Owls incessant screaming in the Night louder than usual, the Sun's setting red in a Mist, and also a white Fog creeping along in moorish or marshy Grounds, the Fire burning blue, and the Horns of the Moon bright and sharp, little Clouds hovering low in the North, the Sky being unclouded elsewhere, are all Signs of Frost.

Q. What Prognosticks are there that Hail is engender'd in the upper Region?

A. The Sun's casting Light at its rising, as reflecting on the lucid-Matter in the Clouds: If the Sky at the Sun's rise is pale, and refracted Beams appear in the Clouds, there will Storms of Hail soon fall.

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Q. What are the Signs of Snow and Sleet ?

A. The Clouds appear white or yellow, and as it were curdled, moving heavily, the Sun's looking pale at its rising, the much loughing of Cattle in the Field, a whisking VVind, turning to and fro, the croaking of Ravens, and Birds flying with drooping VVings.

Q. What are the Signs or Forerunners of a Thaw when a Frost has continued long ?

A. The Sun's looking watery at its rise, the VVinds sudden shifting, and inclining to the Southern or Western Points of the Compass, a gross and damp Air, the sweating of the Ice, the Sun's setting in a blewish Cloud, the Stars, and Horns of the Moon looking dull, for all these foreshew a Change of VVeather is very near.

Of the Magnet or Loadstone, its wonderful Vertues, and also of other Stones, Flowers, &c.

Q. WHY does the Magnet or Loadstone so affect to draw Iron to it when it rejects other Metals ?

A. This is done by a Sympathy natural to its Vertue, having more Affinity with Iron in its Generation than with any other Metal, as being perhaps made of the same concrete Liquor, tho' not alike as to Form or Perfection, the one by the working of Nature changing into a Stone, tho' ponderous, and the other into a Metal.

Q. Why does the Point of the Needle in the Sailor's Compass, or any other, always point directly to the North ; and tho' it be turn'd any other way, it rests not till it comes to that Point ?

A. Many things are assign'd for this, as that this Stone sympathizes with the Northern Polar Stars whose Influence and attractive Vertue, by an occult cause this to be done.

Others hold, that there are mighty Rocks of this Loadstone in the Northern Seas, and they by a sympathetick Vertue draw any thing that has been touch'd with the same towards them, if it easily turns about, as the Needle does : But all we can say, though this is very useful for Sailors, being found out by one *Flavius*, yet it remains as a Secret in Nature, which the Learned have not yet determin'd as to any certainty, but only for that gives us Conjecture.

Q. Why does Jet and Amber draw Hairs, Chaff, Straws, and suchlike light Matters to them, in a manner as the Loadstone does Iron ?

A. They do it only when they are rubb'd and heated, so that there is then an attractive Fat or Oily Spirit, which sucks 'em to itself, with the Air it draws to fill the Pores that open by the friction or rubbing that has expell'd it, by the heat it caus'd to enter in that Motion.

Q. Why does the Stone call'd Astroices move about when put into Vinegar, as if it had Life ?

A. This is caus'd by the sharpness or acidity of the Vinegar entering into the Pores, which forcibly stretching and dilating them, force out the Air that took up those little spaces before ; so that by this expulsion and struggling the Motion is made.

Q. Why does a Tree in India (thence call'd the Shamefac'd Tree) draw up its Leaves together, as if it retreated thro' Bashfulness, when a Man goes to touch them ?

A. This seems to be by the forcing of the Air in pressing the Hand forward, or the approaching warmth, or that the scent of the Man's Breath or Pores is offensive, so that the Leaves being of tender Nature, shrink back to avoid the approaching

proaching Injury ; as noxious Scents do the like by Plants among us, which will close and draw together to keep them out, and fortifie themselves against what otherwise would most certainly bite or kill them.

Q. Why do most Flowers open and shut to the Sun when it rises and sets, as if they sleeping and making paid Homage to that Planet ?

A. Their shutting after Sun-set proceeds from no other Cause than the falling of the cold Dews, that after so much heat chill their tender seedy Parts, wherein the Dew gathers, and so causes 'em (for their preservation) to contract their Folds, that they may keep it out as much as may be ; as we see by the *Anemone Rose*, and others, if not over-blown and decaying.

Then, on the other hand, after so much Chill and Cold as they have sustain'd in the Night, the reviving Rays of the Sun heating the Air, and drying up the Moisture, dilates the Pores the Cold had shut up, and by the force of that dilatation growing more pliable or limber, they spread themselves.

Of Earthly Meteors, or Bodies perfectly mix'd.

Q. How do you describe Earthly Meteors, and their Kinds ?

A. These are divided into four Kinds ; the first are divers sorts of Earth ; the second, Liquors concrete ; the third, Metals and Metallicks ; the fourth are Stones.

This Division is not altogether perfect, by reason many of these Minerals partake of two Kinds, and the Names of these Kinds may be us'd to others : Yet minding as plain as can be

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declare the things themselves, the Cayil about James shall not greatly trouble us, especially since we pretend not to teach Philosophers, but such as need a plainer Instruction.

Q. *Which are most valuable, the Internal or External Treasures of the Earth?*

A. Flowers, Fruits, Corn, Cattle, and all other External Terrestrial Births, are of exquisite use to Mankind; but the Earth is an Element not only beautified without, but most richly stored within with great variety of admirable Creatures both useful and profitable to Mankind, such as her rich Mines of Gold, Silver, Copper, Brass, and Iron, as also her higher-priz'd Commodities, as precious Stones and rich Gems of all kinds.

Q. *What are the Number of Metals?*

A. Metals are Seven in number, as the Planets are, Gold, Silver, Amber, Iron, Lead, Brass, Copper. Gold representeth the *Sun*, Silver the *Moon*, Amber (call'd *Electrum*) *Mercury*, Iron *Mars*, Lead *Saturn*, Brass *Venus*, and Copper *Jupiter*: Or else the seven are distinguish'd thus: All Metal is perfect, soft, and pure as Gold; or 'tis pure and hard as Silver; or it is hard and impure as Iron, or else soft and impure as Lead: And for Amber, it is compounded of Gold and Silver, as *Cyprius* Copper is made of Brass and Iron, containing an equal Substance of Brass and Iron, which is the reason that (too much concocted and highly structur'd) 'tis easily chang'd into Brass, and rechang'd into Copper.

Q. *How and where is Gold found?*

A. Gold is found in divers manners, to wit, mix'd with Sand, as in *Bohemia*; on the Shore, as among the Waters near to *Goldborough* and

Risegrond; and among the Stones in Mountains as in *Calecut*, and in the *Indies*, &c.

The Generation of Gold is usually on the tops of Mountains, because that there, in the highest Places, the Sun doth more easily purifie that which retaineth too much Earthiness in it; and when the Rain and Torrents do flow down, they carry the Gold down with them to the foot thereof, where it is gather'd among the Sand, or else in Waters near thereunto, whither it is drove by the violence of Floods, except the Ground chance to open with those Inundations, and the Gold falls into the gaping Jaws of the Earth, and so sticks there. Besides it is observable, that what is found in the Entrance of the Mine is not the purest, but serves as an Invitation to farther Labour and Pains. That which is found in Waters and Rivers is fish'd for, and is in form of little Grains: In Rocks and Mountains it is taken out by delving and digging.

Q. What (among all the rest) can we say of Silver?

A. It is the most Noble among Metals, next to Gold; for tho' Copper in colour, and Lead in weight, do come nearest Gold; yet in substance, pureness, and fastness, Silver is so like unto it, that good Silver may be said to be only imperfect Gold in substance, failing in Colour, and that by Succession of Time it is sometimes chang'd into Gold, as in many Years space Lead turneth into Silver. The Mines of Silver are more common than Mines of Gold; and it is usually engendered in four manners, either in the Earth or in Brass, in Lead or in Stone, which being purg'd and melted, yield some quantity of Silver.

In the Mountain call'd *Mons Regius* Stones retain much Silver, which being put in the Fire, there is found in every Pound of Silver that runneth out of them half an Ounce of Gold at the least.

Silver is oft times found to be mixt with Copper, as in *Alsatia*, near the *Rhine*, in the Mountains of *St. Ann*, and in *Messein*. When Silver is separated from Lead, it leaveth a Scum, which is called *Lytharge*, and is a kind of impure Lead.

Q. What is Quicksilver ?

A. It is call'd *Materia Metallaris*, the Matter of the Metal ; and tho' it hath the Name of Silver, yet in Nature it approacheth nearer to Gold; for it is like unto it in tenuity and weight, and to Silver only in colour. And, notwithstanding the Opinions of many Chymists, Quicksilver is not a Metal, but a Water condens'd, not by Heat (for 'tis not harden'd) nor by cold (for then it would be a Stone or Metal) but by some other terrestrial, rare, and pure Portion, whereby it cometh to be weighty and cold, splendid and liquid, and is therefore rank'd among those Metalline Substances which differ but a little from Water ; and it is common in Experience, that the Mountains wherein Quicksilver is found are very green, and full of Fountains.

Q. What is Electrum or Amber ?

A. Many Authors, Philosophers and Chymists, disagree in their Opinions and Discourses of Amber ; some reckon Amber among pliable and hard Metalline Substances, others will not acknowledge it to be any thing but the Gum of a Tree, producing Rosin, the which is common in *Arabia*.

Philemon writeth, that in two Places of *Scythia* Amber is dug out of the Ground like a Stone, and in

in one Place it is White, in another Yellow : To omit this Argument, and to agree with those who allow Amber to be a Metal, is most consonant to Reason. The Nature and Property of it is a mean betwixt Gold and Silver, and such is the true and natural Amber ; as for that which is used for Beads, it is but artificial.

Amber partaketh more of Gold than Silver because it is more pure, and more apt to be wrought ; for if it consisted more of Silver, it could not endure the Forge and Hammer.

Q. What is to be said of Iron ?

A. This is taken out of the Earth, and to make it malleable, the best thereof is laid to dry in the Sun ; and that which is earthy doth soften and moulder with the Rain, as that which is moist doth melt with the Sun, which as the Venom of it is consum'd in the Furnace by the Fire by how much the more it is purg'd in the Fire by so much the more it is purified, in such sort as that which is earthy doth at last turn into Scales and Dross, and the subtil part is converted into Steel.

Q. What is Steel ?

A. Common Steel is artificially-extracted Iron of that which is more nicely purg'd, together with a little Marble added thereunto : But in several Places there is natural Steel, viz. in Persia, and in the Chaldean Isle near Damascus, whereof the best Scimeters and Falchions in the World are made which cut so well, that there's no Razor, though never so well steel'd and temper'd, hath a sharper and better Edge.



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